

Rare Plants of the Sacramento Mountains

Scott Lee-Chadde
Laura Foster Huenneke

Department of Biology
New Mexico State University
Las Cruces, NM 88003

Produced as a contribution to the Ecosystems Needs Assessment for the Sacramento Mountains
for the Rocky Mountain Forest and Range Experiment Station
USDA Forest Service

Final Report for 2864-816

LIBRARY COPY
ROCKY MOUNTAIN RESEARCH STATION
FORT COLLINS CENTER

C. Regan

Rare Plants of the Sacramento Mountains

Scott Lee-Chadde

Laura Foster Huenneke

Department of Biology
New Mexico State University
Las Cruces, NM 88003

Produced as a contribution to the Ecosystems Needs Assessment for the Sacramento Mountains
for the Rocky Mountain Forest and Range Experiment Station
USDA Forest Service

The Sacramento Mountains of south-central New Mexico constitutes a region of diverse natural communities and complex challenges for environmental management, because of the number of rare species, noxious weeds, and intense conflicts over natural resource conservation and sustainability. In 1994-95, in association with the USDA Forest Service, we undertook to develop the means of assessing ecosystem status in the Sacramentos. Rare species – their status, vulnerability to threats, and management needs – can be used to indicate certain aspects of ecosystem status. Thus we analyzed the presence and status of rare and endangered plants of the Sacramento Mountains to assess the degree of biological endangerment to individual plant species, and to assist in determining conservation priorities and management. In particular, we were interested in the question of whether “rare” species are rare because of intrinsic ecological and evolutionary reasons (e.g., restricted to a rare habitat type) or because recent history has caused actual declines in habitat area, environmental quality, or population size. The Sacramento Mountains of south-central New Mexico represent an area of high endemism, and thus we suspected that many of its “rare” plants are species that have *always* been rare, rather than those facing some biological endangerment due to recent changes of environment or management. The initial stage in this analysis was to construct a database of information on rare plant species of the Sacramentos – this document.

Methods

The Sacramento Mountains are located in southeastern New Mexico (long/latitude) and are considered the southern most extension of the Rocky Mountain chain. Within the Sacramento Mountains four distinct ranges are recognized: the White Mountains near Ruidoso, the Jicarilla Mountains near Carrizozo, the Capitan Mountains near Capitan, and the Sacramento Mountains near Cloudcroft. These four ranges make up three distinct sky islands. The Jicarillas and Capitans form isolated mountain regions to the north of the largest and highest sky island of the Sacramento and White Mountains. For purposes of this study, the lower elevational boundary of our study area is defined as the Pinyon-Juniper community (Brown’s Great Basin Conifer Woodland) within each sky island.

Within the study area, 50 species of vascular plants, mainly herbs, were identified as rare, threatened, or endangered. The species list was generated from five sources: (1) Inventory of rare and endangered plants of New Mexico (Sivinski and Lightfoot 1994) , i.e. the New Mexico “Endangered Species List”; (2) A handbook of the rare and endemic plants of New Mexico (NM Native Plant Protection Advisory Committee 1984); (3) Endangered and threatened wildlife and plants (USFWS 1994) 50 CFR 17.11 & 17.12 , i.e. the federal “Endangered Species List”; (4) an unofficial list of sensitive plants of the Lincoln National Forest; and (5) a list of the rare plants located in the Sacramento Mountains generated by the New Mexico’s Natural Heritage Program database. All species ever recommended for protection at either the state or federal level were included regardless of their current legal status.

For each species information on its current legal status, distribution, habitat requirements, population biology and ecology was collected. Information sources were gleaned for categorical information that, if known, would assist in the management and conservation of the species (see references). Available information sources included primary literature, government documents (USFWS's Status Reports & Recovery Plans; Forest Service Surveys and Management Plans, NM Endangered Species List, etc.), available floras of New Mexico (Wootton and Standley 1915; Martin and Hutchins 1980), and herbarium labels from plant collections deposited at New Mexico State University Herbarium (NMC). To standardize the process and improve the efficiency of the search, categories of information (database fields) were selected prior to the actual collection of information. Once the categorical information was collected and entered into a database, the database was distributed to botanists and ecologists familiar with the Sacramento Mountains for review. Additional information and comments provided by reviewers was then incorporated into the database.

Two methods are used to determine the threat to each species: a linear ranking system and a multivariate approach. Linear ranking involved a three step process. First, species are scored according to a number of criteria. Scores within categories represent the species threat and/or vulnerability based on that character. For example, using population size as a category, a species with only 10 individuals is more at risk than a species with a 10,000 individuals. Using a discrete scale from 1 (least vulnerable) to 5 (most vulnerable), the species with only 10 individuals would be assigned a score of 5, while the species with 10,000 individuals would be assigned a score of 1. Second, scores are averaged or summed to produce a single score. Finally, species are ranked according to their single score.

While linear ranking systems are relatively straightforward to use, they do have a number of problems. First, the use of a single score to rank species conceals the factors that endanger a species. Species with a similar ranking could be threatened for entirely different reasons. Second, criteria used in ranking species are likely to be correlated and not of equal weight, so scores may be artifacts of the criteria used. Additionally, different criteria may provide different rankings. Third, many species tend to rank together, making it difficult to separate them. However, despite these problems, linear ranking systems do provide valuable information as they force users to gather information, identify information gaps, and articulate assumptions about what threatens a species, and they can be updated as more information becomes available.

Moreover, the data used to generate the linear ranking also generates a species' threat profile that can be used in a multivariate analysis. The linear ranking system provides a sample of n species, each of which has a score on p variables (criteria). These data can then be used to group species with similar vulnerability profiles together and may allow patterns undetectable by the linear ranking system to emerge. Additionally, a similar set of species may have similar management problems and a multivariate analysis may help in identifying management strategies that can be applied to a suite of species, rather than management based on a species by species approach. In the database, we note preliminary assignments of species to groups, based on similarity of scores for the 9 criteria.

In our analysis, 42 species were scored for each of 9 criteria. Eight species were excluded from the analysis. Seven were excluded because information is lacking on the presence of these species in the Sacramento Mountains. Of the seven species, 3 are members of the cactus family (*Mammillaria wrightii* var. *wrightii*, *Opuntia clavata*, and *Pediocactus papyracanthus*) which are found in the lower elevation grasslands surrounding the sky islands, and two are orchids (*Cypripedium pubescens* and *Hexalectris nitida*), both of which are on the outer edge of their range in New Mexico. *Cypripedium pubescens* has been collected once in 1966 in the Sacramentos near Cloudcroft. *Hexalectris nitida* has been collected to the south of the Sacramentos in the Guadalupe Mountains. Most likely, these species are included in lists because of their high cultural value and the difficulty to say with certainty a species doesn't occur in an area. *Lupinus sierrae-blancae* ssp. *aquilinus* was excluded because current taxonomic work (Flora of North American project) considers it to be synonymous with *Lupinus sierrae-blancae*.

Criteria were selected that would (1) provide information on the threat facing a species and be answerable with available information and (2) address the issue of scale and perspective in assessing threat. For instance, the geographic range of a species can be looked at from a local or global perspective. Two range criteria—global range and range within the Sacramento Mountains—are used in assessing a species vulnerability so that a distinction can be made between species that are globally rare, but locally abundant and species that are globally abundant, but locally rare. Similarly, two criteria are used to describe a species habitat, population biology, and its threat. The two habitat criteria distinguish between a measure of the availability of habitat and a species use of that habitat. The two population biology criteria distinguish between number of populations and size of populations to allow distinction between species that have only one large population, and species that have several small populations. Finally, the two threat criteria look at the threat from the species perspective, i.e. is the species sensitive to logging or grazing, and in a general sense, i.e., is the habitat itself declining or threatened as is the case of old-growth Ponderosa pine forest in the Sacramentos.

To keep the scoring process as objective as possible, decision rules for each criteria were devised and constructed that allowed criteria to be scored into three discrete categories: 1 for a low threat and/or vulnerability; 3 for moderate threat and 5 for high threat or risk. The low-to-high scale (1, 3, and 5) was chosen to increase the separation between species that may have otherwise group together. Scoring was done by applying decision rules to the available information about the species, supplemented with the scorer's first hand experience. All species were scored by the authors and a botanist/taxonomist, Richard Spellenberg, familiar with the species. Criteria scores were summed without weighting to give an average and allow ranking of species based on their mean vulnerability score.

Acknowledgments

Our analyses and conclusions about the biological status of these species will be published in a separate manuscript. However, we hope that the database itself will be a useful (and evolving) document for those concerned with plant conservation and diversity in the Sacramento Mountains. Collection of information and production of the database were supported by a contract from the USDA Forest Service Rocky Mountain Forest & Range Experiment Station (Dr. Merrill Kaufmann, investigator) to Laura Huenneke. We gratefully acknowledge the information and expertise of all who contributed to this database, including: Renee Galeano-Popp and Linda Barker of the Lincoln National Forest; Bob Sivinski of the New Mexico Division of Forestry, Department of Energy, Minerals, and Natural Resources; Ellen DeBruin of the New Mexico Natural Heritage Program, University of New Mexico; and Richard Spellenberg, Department of Biology, New Mexico State University.

Table of Contents

Key to Database Fields A-2

Species Descriptions

<i>Agastache cana</i>	A-8
<i>Aletes filifolius</i>	A-10
<i>Allium gooddingii</i>	A-12
<i>Argemone pleiakantha ssp pinnatisecta</i>	A-14
<i>Astragalus altus</i>	A-17
<i>Astragalus kerrii</i>	A-20
<i>Astragalus neomexicanus</i>	A-22
<i>Besseyia oblongifolia</i>	A-24
<i>Castilleja wootonii</i>	A-26
<i>Chrysothamnus spathulatus</i>	A-28
<i>Cirsium inornatum</i>	A-30
<i>Cirsium vinaceum</i>	A-32
<i>Crataegus wootoniana</i>	A-34
<i>Cryptantha paysonii</i>	A-36
<i>Cypripedium paysonii</i>	A-39
<i>Delphinium novomexicanum</i>	A-42
<i>Echinocerus fendleri var. kuenzleri</i>	A-44
<i>Erigeron rybius</i>	A-47
<i>Eriogonum jamesii var. wootonii</i>	A-49
<i>Escobaria villardii</i>	A-51
<i>Euphorbia wootonii</i>	A-53
<i>Hedeoma pulcherrimum</i>	A-55
<i>Hedeoma todsenii</i>	A-57
<i>Heuchera wootonii</i>	A-59
<i>Hexalectris nitida</i>	A-61

<i>Hexalectris spicata</i>	A-63
<i>Ionactis elegans</i>	A-65
<i>Lesquerella aurea</i>	A-67
<i>Lilium philadelphicum var. andinum</i>	A-69
<i>Lupinus sierrae-blancæ</i>	A-71
<i>Lupinus sierrae-blancæ ssp. aquilinus</i>	A-73
<i>Malaxis tenuis</i>	A-76
<i>Mammillaria wrightii var. wrightii</i>	A-78
<i>Opuntia clavata</i>	A-80
<i>Pediocactus papyracanthus</i>	A-82
<i>Penstemon alamosensis</i>	A-84
<i>Penstemon cardinalis ssp. cardinalis</i>	A-87
<i>Penstemon neomexicanus</i>	A-89
<i>Philadelphus wootonii</i>	A-91
<i>Potentilla sierrae-blancæ</i>	A-93
<i>Primula ellisiae</i>	A-95
<i>Pseudocymopterus longiradiatus</i>	A-97
<i>Pteryxia davidsonii</i>	A-99
<i>Ribes mesclerium</i>	A-101
<i>Senecio sacramentanus</i>	A-103
<i>Sibara grisea</i>	A-105
<i>Stipa curvifolia</i>	A-107
<i>Tetradymia filifolia</i>	A-109
<i>Tradescantia wrightii</i>	A-111
<i>Valeriana texana</i>	A-113

Key to Database Fields

Header

The scientific and common name, family, and synonyms are given for each species.

Status

FWS (Fish and Wildlife Service)

- E - listed as "endangered" under the Endangered Species Act. An "endangered species" is defined as "any species which is in danger of extinction throughout all or a significant portion of its range" 16 USCA 1532(6).
- T - listed as "threatened" under the Endangered Species Act. A "threatened species" is defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range" 16 USCA 1532(20).
- C1 - "taxa for which the [FWS] has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Development and publication of proposed rules on these taxa are anticipated; however, because of the large number of category 1 taxa, it will take several years to clear the backlog" 50 CFR 17.
- C2 - "taxa where there is some evidence of vulnerability, but for which there are not enough data to support listing proposals at this time...Further biological and research and field study usually will be necessary to ascertain the status of the taxa in category 2, and some of the taxa are of uncertain taxonomic validity" 50 CFR 17
- 3A - "taxa for which the [FWS] has persuasive evidence of extinction" 50 CFR 17
- 3B - "names that, on the basis of current taxonomic understanding (usually as represented in published revisions and monographs), do not represent distinct taxa meeting the [Endangered Species] Act's definition of "species" 50 CFR 17. A "species" is defined as "any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" 16 USCA 1532(16)..
- 3C - "taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in categories 1 or 2." 50 CFR 17

NM (State of New Mexico)

Definitions from Sivinski and Lightfoot (1994).

List 1. Plants endangered in New Mexico.

List 1 plants are legally protected from unauthorized collection and take under the New Mexico Endangered Plant Species Act and NMFRCD regulations.

- L1A - "the taxon is listed as threatened or endangered under the provisions of the federal Endangered Species Act."
- L1B - "the taxon is so rare across its entire range and of such limited distribution and population size that unregulated collection could jeopardize its survival in New Mexico."
- L1C - "the taxon may be widespread in adjacent states or Mexico, but its numbers are being significantly reduced to such a degree that within the foreseeable future the survival of the taxon within New Mexico is jeopardized."

List 2. New Mexico Rare and Sensitive plant species.

List 2 species are not legally protected under the New Mexico Endangered Plant Species Act.

- L2 - "taxa that are considered to be rare because of restricted distribution or low numerical density. {Further} they need not be endemic to New Mexico, but must be regionally endemic or rare throughout their range.. Since they are rare, these species are sensitive to long-term or cumulative land use impacts and are vulnerable to biological or climatic events that could eventually threaten them with extinction or extirpation. Therefore, List 2 species are monitored by the state of New Mexico to determine if they should be elevated to List 1 endangered species status."

List 3. NM Rare Plant Review

List 3 species are not protected under the New Mexico Endangered Plant Species Act.

- L3 - Plant species under consideration for either List 1 or List 2 status, but more information is needed to make a decision. List 3 species are either "taxonomically questionable or poorly understood as to distribution and endangerment."

L4. Plant Species considered, but not included.

List 4 species are not protected under the New Mexico Endangered Plant Species Act.

- L4 - Plant species that were either (1) listed on the 1985 New Mexico Heritage Program Element List that were considered but not included on Lists 1, 2, or 3; (2) species rejected during a 1991 interagency review; or (3) species originally included as List 2, or 3 species but "were later determined to be too abundant to retain."

FS (Forest Service)

Definitions from Sensitive Species List of the Lincoln National Forest (tentative)

- L1 - "taxa that should be actively considered for inclusion in all project-level Biological Evaluations."
L5 - "candidate species that are not on the Regional Foresters Sensitive List."

TNC (The Nature Conservancy)

The Nature Conservancy assigns both a global and state rank to set conservation priorities. Definitions from the New Mexico Natural Heritage Program.

Global Rank

- G1 - critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
G2 - imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
G3 - either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (i.e. the Mogollon Plateau) or because of other factor(s) making it vulnerable to extinction throughout its range; in terms of occurrences, in the range of 21 to 100.
G4 - Apparently secure globally, though it might be quite rare in parts of its range, especially at the periphery.
G5 - Demonstrably secure globally, though it might be quite rare in parts of its range, especially at the periphery.
T - taxa below the species level can be ranked by placing a T-rank next to the global rank.
? - a ? next to a global rank indicates the taxonomy of the species or taxon has been questioned.

State Rank

- S1** - critically imperiled in state because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from the state.
- S2** - imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from the state.
- S3** - rare or uncommon in state (on the order of 21 to 100 occurrences).
- S4** - Apparently secure in state, with many occurrences.
- S5** - Demonstrably secure in state and essentially ineradicable under present conditions.

Distribution - General

Endemic to New Mexico: Is species endemic to New Mexico?

New Mexico Counties: counties in NM where species is located.

Other States: other states or countries where species is located.

Distribution outside New Mexico: Is the species rare or common outside of New Mexico?

Ownership: Whether the species occurs on state, federal, Indian, and/or private lands and the administrative body governing those lands.

NM - state lands administered by the State Land Office of New Mexico, or Highway Department right-of-way lands.

BLM - public lands administered by the Bureau of Land Management.

DOD - federal lands administered by the Department of Defense

FS - public lands administered by the Forest Service.

MIR - Mescalero Indian Reservation lands. Administered by the Bureau of Indian Affairs.

NPS - public land administered by the National Park Service.

Distribution - Sacramento Mountains

Local Endemic: Is species endemic to the Sacramento Mountains?

Number of Known Populations: number of known populations in the Sacramento Mountains. Data from census/survey information.

Size of Populations: Population size from census/survey data.

Collected: Information on collections from herbarium specimens. Format is *Description, Collector, Date, (Herbarium Location)*. NMC is the Herbarium at New Mexico State University

Location: Location of species by section, township, and range.

Habitat

A very brief, general description of a species habitat is provided.

Habitat Specificity: Is the species a habitat generalist (broad) or specialist (restricted) or somewhere in between (moderately broad)

Elevation: the range in elevation in feet a species is found.

Slope and Aspect: the slope and aspect where a species occurs.

Edaphic factors: types of soils, parent material, etc.

Natural Disturbance: dependence of species on natural disturbance such as fire and floods.

Successional Status: Does the species favor *early*, *middle*, or *late* successional stages? Is the species a colonizer of disturbed areas?

Habitat Types: Community types are from Brown D. ed. 1982. Biotic communities of the American Southwest—United States and Mexico. *Desert Plants* 4(1-4):1-342.

Population Biology/Ecology

Life Form: herb, shrub, tree, or vine.

Life Cycle: annual, biennial, or perennial.

Mode of Reproduction: sexual or vegetative

Pollination: Pollination mechanism—wind, water, insect, bird—and specific pollinators.

Flowering Period: months plant is in flower

If known information is also presented for the following categories

Timing of Reproduction: monocarpic or polycarpic.

Flowering Phenology: asynchronous or synchronous flowering.

Seed Set: measure of seed production per inflorescence. low, medium, or high

Seed Dispersal: mechanism of seed dispersal: wind, water, animal, etc.

Seed Bank: Absence or presence of seed bank

Germination: requirements of germination.

Survivorship: Survivorship pattern (low/high) for seedlings, juveniles, and adults.

Threats

Present and potential threats to the survival of the species. For example, habitat loss, development, over-grazing, logging, fire suppression, loss of pollinators, etc.

Assessment

The score of each criteria after applying decision rules (see Table 2) to available information. Table 3 (see text) extracted for each species

Geographic Range:

Range w/in Sacramentos:

Community Types:

Habitat Specificity:

Number of Populations:

Size of Populations:

Life History:

Threats:

Habitat Vulnerability:

Mean Score: Mean of the Criteria Scores

Group: Which cluster group species belongs to. See text for description of groups

Comments

Miscellaneous information on the species' autecology, legal history, etc.

References

References are given for primary literature sources and government documents. The following general references are not included in the "Reference" section as they apply to all species.

- Martin, W. C. and C. R. Huchthins. 1980. *A Flora of New Mexico*. Volumes I & II. J. Cramer, Hirschberg, Germany
- New Mexico Native Plant Protection Advisory Committee. 1984. *A handbook of rare and endemic plants of New Mexico*. University of New Mexico Press, Albuquerque, NM.
- Sivinski, R., and K. Lightfoot. 1994. *Inventory of the rare and endangered plants of New Mexico*. 2nd edition. Misc. Publication No. 3. New Mexico Forestry and Resources Conservation Division: Energy, Minerals, and Natural Resources Department. Santa Fe, NM.
- Wooton, E. O. and P. C. Standley. 1915. *Flora of New Mexico*. Contributions from the United States National Herbarium Vol 19. Government Printing Office, Washington D. C. (Not cited unless it is one of the only primary sources for information on a species).

Species Descriptions

Agastache cana (Hooker) Wooton and Standley

Grayish white giant hyssop; Mosquito plant

Lamiaceae (Labiatae)

Synonyms: *Cedronella cana* Hook.; *Cedronella mexicana* var. *cana* (W. J. Hooker) A. Gray

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Bernalillo, Dona Ana, Grant, Lincoln, Luna, Otero, and Sierra

Other States: adjacent Texas

Distribution Outside New Mexico: rare outside New Mexico

Ownership: BLM; FS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: No collections at NMC for Sacramento Mtns. Collected numerous times in the Organ Mtns (NMC).

Location:

Habitat

In crevices and at bases of sheer granite cliffs or in protected box canyons with sclerophyllous oaks, junipers, and *Baccharis* spp. or in ecotone of upper desert scrub and lower oak-pinyon zones. Often found in temporary seeps.

Habitat Specificity: moderately broad

Elevation: 4600 - 5900 feet

Slope and Aspect: N-, E-, & NE-facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Madrean Evergreen Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators: Hummingbirds; large bees (?)

Flowering Period: June - August (or later with autumnal rains)

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramento:	5
# Community Types:	1
Habitat Specificity:	3
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	3
Threats:	1
Habitat Vulnerability:	1

Mean Score: 2.00

Group: 7

a - score based on scorer's experience with species

Comments

References

- Lint, H., and C. Epling. 1945. A revision of *Agastache*. *American Midland Naturalist* 33:207-230.
- Sanders, R. W. 1987. Taxonomy of *Agastache* Section *Brittonastrum* (*Lamiaceae-Nepeteae*). *Systematic Botany Monographs* Vol. 15. 92 pg.
- Wootton, E. O., and P. C. Standley. 1913. Description of new plants preliminary to a report upon the flora of New Mexico. *Contr. U.S. Nat. Herb.* 16:109-196.

Aletes filifolius Mathias, Constance and Theobald

Threadleaf false carrot

Apiaceae (Umbelliferae)

Synonyms: none

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Catron, Dona Ana, Eddy, Grant, Hidalgo, Lincoln, Luna, Otero, Socorro, and Torrance.

Other States: adjacent west Texas

Distribution Outside New Mexico: ?

Ownership: BLM, FS; NPS; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Many collections at NMC from Organ Mtns.

Location:

Habitat

Canyon slopes, arroyos, and bottoms; rocky crevices in rocky mesic canyons.

Habitat Specificity: restricted

Elevation: 5000 - 7000 feet

Slope and Aspect: W-facing slopes

Edaphic Factors: calcareous and gypseous soils

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: May - August

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	5
Number of Populations:	1 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerability:	1

Mean Score: 2.78

Group: 5

a - score based on scorer's experience with species

Comments

Dropped as federal candidate (C1) species 12/15/80. Dropped from state list—too common or widespread (Inventory).

References

M. E. Mathias, L. Constance, and W. L. Theobald. 1969. Two new species of Umbellifereae from the Southwestern United States. *Madrono* 20:214-219.

Allium gooddingii Ownbey

Goodding's onion

Liliaceae

Synonyms:

Status

FWS: C1

NM: L1B

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Catron, Lincoln, and Otero

Other States: adjacent Arizona

Distribution Outside New Mexico: as common as in New Mexico

Ownership: FS; MIR; NPS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 21

Size of Populations:

Collection: Sierra Blanca *Ski Area*, 10,000 ft, *Paul Knight* #148 (UNM 67235) (Sec. 33 T 10S, R 12E); North side Sierra Blanca Peak at 11,000+ ft, (Mescalero Indian Reservation), *R. D. Worthington* #6341 (Univ. of New Mexico 70824) (Sec. 4, T 11S, R 12E.) ; Sierra Blanca Ski Area, on lower part of road to Radio Tower, Soreng & Spellenberg, 1982 (NMC).

Location: Ski Apache Area and White Mountain Wilderness: Secs. 28 (3 pops), 29 (6 pops), 32 (5 pops), 33 (5 pops), and 34 (2 pops), T 10S R 11E

Habitat

In the understory of mature coniferous forests. Steep, shaded slopes. Moist shaded canyon bottoms in climax conifer forest. Open areas where there is adequate sub-surface moisture.

Elevation: 6500 - 11400 feet

Habitat Specificity: restricted

Slope and Aspect: north, northeast and northwest facing slopes; north draining canyon bottoms.

Edaphic Factors: rhyolite or similar rock; stable forest soils with high organic content. Mesic.

Natural Disturbance:

Successional Status: usually climax; old growth—requires moisture.

Community Types: Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual; vegetative

Pollinators: small bees and wasps (?)

Flowering Period: June - August

Seed Dispersal: gravity

Threats

Activity that changes the available sub-surface moisture at a site—water development, removal of beaver, and potentially logging. The effects of logging are mixed. In Arizona, *A. gooddingii* has been observed growing vigorously in monocultures in sites that have been heavily logged (R. Galeano-Popp *pers. comm.*). Also does well on Ski Apache ski slopes (clear-cut areas) in the Sacramento Mountains, probably as a result of the abundant snow (natural and man-made) and prolonged snow-pack at that elevation.

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	1
Size of Populations:	3
Life History:	1
Threats:	3
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 5

Comments

Populations in the Sacramento Mountains occupy disturbed sites, areas with less canopy closure, and higher elevations than populations known from the Gila National Forest and national forests in Arizona. A widespread, but rare species, the species is an indicator of sub-surface moisture. The Sacramentos Mountains represent the eastern most edge of its distribution.

References

- Anonymous. 1989. Survey of *Allium gooddingii*. Smokey Bear Ranger District, Lincoln National Forest.
- Fletcher, R. 1984. *Allium gooddingii* Status Report Supplement. Forest Service
- Ownbey, G. S. 1947. The genus *Allium* in Arizona. Research Studies, State College of Washington 15:211-232
- Spellenberg, R. 1982. Status report on *Allium gooddingii*. USFWS

Argemone pleiacantha Greene ssp. *pinnatisecta* Ownbey

Sacramento prickly-poppy (prickly-poppy)

Papaveraceae

Synonyms:

Status

FWS: E

NM: L1A

FS: L1

TNC: G5T2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; BLM; NM; Oliver Lee State Park; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 10

Size of Populations: Population Size 1987, 1988, & 1989 (nk = not known): Fresno 72, nk, nk; La Luz 8, nk, 13; Salado 1, nk, nk; Dry 11, nk, nk; Alamo 744, 778, 730; Caballero 117, nk, nk; Mule nk, 7, nk; San Andres 2, 18, 12 (1990 18 plants; and 1993 36 plants); Dog 157, nk, nk; Escondido nk, nk, 45(private).

Collection: Holotype: 9.6 miles west of Cloudcroft, altitude 6600 ft. Ownbey 1754 8/12/53 (MIN); 6.4 miles west of Cloudcroft, about 7000 ft, Earle 585 (NY); Rio Fresno and La Luz Canyon, Wootton 1901 (NMC). La Luz Canyon, Wagner & Sobo 1977 (NMC); Dog Canyon, Spellenberg 1976 (NMC); West of Mt. park in old apple orchard in dense oak thicket, Dunn 1952 (NMC); West of High Rolls, Soreng & Ward 1982 (NMC); Along roadside of Hwy. 82, west side of High Rolls (1890 m), Spellenberg 1976 (NMC).

Location: Alamo, Caballero, Dog, Dry, Escondido, Fresno, La Luz, Mule, Salado, and San Andres canyons. (see Soreng 1982, Malby 1987, 1989 for specific locations)

Habitat

Rocky canyon bottoms; floodplain and channel deposits; steep slopes; desert washes, springs, stream banks, fields, roadsides; disturbed sites. Found from riparian to xeric uplands.

Habitat Specificity: restricted

Elevation: 4200 - 7100 feet

Slope and Aspect: north, northeast, and northwest facing slopes.

Edaphic Factors: loose, gravelly soils; limestone, possible sandstone and gypsum inclusions. Colluvial and alluvial deposits

Natural Disturbance: fire (?) (cf. Dog Canyon); flood (cf. Alamo canyon)

Successional Status: early, a colonizer of disturbed sites.

Community Types: Great Basin Conifer Woodland, Semidesert Grassland Chihuahuan Desertscrub

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Timing of Reproduction:

Flowering Phenology:

Pollinators: carpenter, honey, and bumblebees; soldier and lizard beetles; flies; butterflies

Population Biology/Ecology (con't)

Flowering Period: May - September

Seed Set: 2000 seeds per plant (Alamo and Dog Canyon)

Seed Dispersal: gravity, wind, water, possibly animals.

Germination: cold stratification; increased germination with seed coat scarified. 3% germination rate in nursery

Survivorship—Seedling: low **Juvenile:** ? **Adult:** ?

Mating System: outcrossing

Threats

Rarity, flood control, and management that focuses on the product (i.e., the species), rather than the process (i.e., disturbance).

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	1
Size of Populations:	3
Life History:	3
Threats:	3
Habitat Vulnerably:	1

Mean Score: 3.22

Group: 4

Comments

Alamo Canyon, the site of a number of floods, is the largest population. Population sizes following floods in lower Alamo Canyon: 100 plants 1977; flash flood 1978 or 1979; 6 plants 1980; 46 plants August 1987; 80 plants July 1988; flood in August 1988 killed 4 plants; 50 plants July 1989; flood August, 1989; 32 plants remain after flooding in August 1989.

Species is not as good as an invader of disturbed sites as other prickly-poppies.

Listed as Endangered (ESA) 8/24/89.

References

- Fletcher, R. 1978. Forest Service status report for *Argemone pleiacantha* ssp. *pinnatisecta*. USFS, Region 3, Albuquerque.
- Malby, S. 1987, 1988, 1989. *Argemone pleiacantha* ssp. *pinnatisecta* survey. USFS, Lincoln National Forest, Alamogordo, NM.
- Ownbey, G. B. 1958. The genus *Argemone* for North America and the West Indies. *Memoirs of the Torrey Botanical Club* 21:1-159.
- Soreng, R. 1982. Status report on *Argemone pleiacantha* ssp. *pinnatisecta*. USFWS.
- USFWS. 1993. Sacramento prickly poppy (*Argemone pleiacantha* ssp. *pinnatisecta*) Recovery Plan. USFWS, Albuquerque, NM. (see references therein)
- Wood, S. 1990. Interim Management Plan for *Argemone pleiacantha* ssp. *pinnatisecta*. USFS, Lincoln National Forest, Alamogordo, NM.

Astragalus altus Wooton and Standley

Tall milk-vetch

Fabaceae (Leguminosae)

Synonyms: *Atelophragma altum* (Woot. & Standl.) Rydb.

Status

FWS: 3C

State: L2

FS: S; L1

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 7

Size of Populations: Dry Canyon 24-36 plants; Russia Canyon approx. 200 plants, Will Canyon approx. 100 plants; Private land 12 plants; Cox Canyon, "large population"; Southside Penasco Canyon approx. 200 plants; Northside Penasco Canyon approx. 200 plants (1979 Data)

Collection: Type: Toboggan, 7700 ft (note: Toboggan was a Post Office 15 miles east of Alamogordo on Hwy. 82; today Toboggan Canyon) Wooton 7/31/1889 (US Nat. Herb no 690253); Upper Tularosa Creek, Wooton 8/6/0; Cloudcroft, Slater 1915. Rio Penasco Canyon, Sivinski 1555. 1/2 mile SE of Cloudcroft on St. Rt. 24, Spellenberg 5/30/69 (NMC); Nelson Canyon, Todsén 1976 (NMC); 8.5 miles SE of Cloudcroft along St. Rt. 24, "common along roadbank", Spellenberg 10/27/68 (NMC); Chippaway Park, approx. 6 miles SE of Cloudcroft on St. Rt. 24, "very common", Spellenberg 8/10/69 (NMC); Tularosa Canyon, 6 miles S of Mescalero on old Hwy 24, Spellenberg 8/29/68 (NMC); 7 miles N of US82 in Silver Springs Canyon along roadcut, Spellenberg 8/10/69 (NMC).

Location: 1989 data: Dry Canyon (S35, T15S, R15E & S5, T16S, R13E); Russia Canyon, Rt 247 (S22, T16S, R12E); Wills Canyon, Rt 169 (S14, T17S, R12E); private land, Rt 232 (S31, T16S, R13E); Cox Canyon (NE 1/4, S32, T16S, R13E, S24 & 25, T16S, R12E); Southside Penasco Canyon, Rts 541 & 164 (NW 1/4, S10, T17S, R13E); Northside Penasco Canyon (S3-6, T17S, R13E); Nelson Canyon (T16S, R11E, S14); Fresno Canyon.

Habitat

Limestone soils in upper Ponderosa pine and lower Douglas fir habitat types, on steep forest slopes, or along canyon bottoms. Along roadcuts. Grassy openings in forest. Oak thickets.

Habitat Specificity: moderately broad

Elevation: 6500 - 8200 feet

Slope and Aspect: N-, NW-, W-, E-, SE, & S-facing slopes. Steep slopes—40 degrees

Edaphic Factors: limestone soils; loose, rocky soils.

Natural Disturbance:

Successional Status: early, frequently a colonizer

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial
Mode of Reproduction: sexual

Population Biology/Ecology (con't)

Pollinators:

Flowering Period: May - September

Threats

Development of Cloudcroft area (habitat loss).

Assessment

Geographic Range: 5

Range w/in Sacramentos: 5

Community Types: 5

Habitat Specificity: 3

Number of Populations: 3

Size of Populations: 3

Life History: 3

Threats: 1

Habitat Vulnerably: 1

Mean Score: 3.22

Group: 4

Comments

The fact that this is an early successional species is emphasized by the fact that the site of many of the collections of Spellenberg at NMC are not mentioned in the 1989 Forest Service survey (Anonymous 1989). Removed as federal candidate (C1) species 12/15/80.

References

Anonymous. 1989. *Astragalus altus* monitoring. USFS, Lincoln National Forest, Alamogordo, NM.

Barneby, R. C. 1964. Atlas of North American *Astragalus*. *Memoirs of the New York Botanical Garden* 13:1-1188.

Fletcher, R. A. 1979. Provisional status report supplement *Astragalus altus*. USFS, Region 3, Albuquerque, NM.

Rydberg, P. A. 1928. Notes on Fabaceae—XI. *Bulletin of the Torrey Club* 55:155-164.

Astragalus kerrii Knight et Cully

Kerr's milkvetch

Fabaceae (Leguminosae)

Synonyms:

Status

FWS: C2

NM: L1

FS: L1A

TNC: G2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 17

Size of Populations: Capitan Mtns: NE side of Capitan Mtns. (54 plants); Pine Lodge Boy's Camp (8 plants); Copeland Canyon (50 plants); Raton Springs (6 plants); Pierce Canyon (128 plants); Baca Spring Creek (4 plants); Sawset Canyon (6 plants); Matney Springs (100+ plants); Ellis Canyon (56 plants); Hale Canyon (40+ plants); Figure Seven Canyon (15 plants); Zeufeldt Canyon (14 plants); Upper Michallas Canyon (25+ plants); Lower Michallas Canyon (47 plants); Arroyo Serrano (65+ plants); Upper Red Lick Canyon (14 plants); Lower Red Lick Canyon (50+ plants).

Collection: Type: Capitan Mtns., just NE of Pine Lodge, 5/20/85, Knight 3399.

Location: Capitan Mountains, see above for general locations and 1994 Status Report for specific location information.

Habitat

Bottom of streambeds or other avenues of water runoff; in full sunlight in Ponderosa pine, Pinyon pine, or Juniper. Pinyon - juniper / Ponderosa pine ecotones.

Habitat Specificity: moderately broad

Elevation: 6050 - 6950 feet

Slope and Aspect:

Edaphic Factors: compacted sandy soil on igneous rock; alluvial deposits.

Natural Disturbance: water runoff; floods (?)

Successional Status:

Community Types: Great Basin Conifer Woodland, Rocky Mountain Montane Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial (short lived)

Mode of Reproduction: sexual

Pollinators:

Flowering Period: late April - late May

Survivorship—Seedling: apparently low; at one pop. 300-500 immature seedlings observed 5/90; 54 adults observed 5/91. (Sivinski 1994)

Threats

No significant threats.

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3
Size of Populations:	5
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 3.22

Group: 1

Comments

Occurs in small area around the foot of the Capitan mountains. Occasionally takes advantage of man-made disturbance.

References

- Bleakly, D. and S. Reed. 1994. Survey for *Astragalus kerrii* (Kerr's milkvetch) Capitan Mountains, Lincoln County, NM. Final Report to NM Forestry and Resource Conservation Division, Santa Fe.
- DeBruin, E. A. 1992. Survey for *Astragalus kerrii* and *Echinocerus fendleri* var *kuenzleri* in the Capitan Mountains area of the Lincoln National Forest. Revised Draft. New Mexico Heritage Program, Albuquerque, NM.
- Knight, P. J. and A. C. Cully. 1988. A new species of *Astragalus* (Fabaceae) from southeastern New Mexico. *Southwestern Naturalist* 36(2):198-200.
- Sivinski, R. 1994. Status Report on *Astragalus kerrii*. Final Report to U.S. Fish and Wildlife Service, Region 2 Office, Albuquerque, NM.

Astragalus neomexicanus Wooton and Standley

New Mexico milk vetch

Fabaceae (Leguminosae)

Synonyms: *Pisophaca neomexicana* (Woot. & Standl.) Rydb.

Status

FWS:

NM: L2

FS:

TNC: G3, S3

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: James Canyon at 8366 ft, near Cloudcroft, Wooton 7/23/1899 (US Nat. Herb. no. 690254); 5 mi. N of Cloudcroft on St. Rt. 24, Silver Spring Canyon, Spellenberg 5/31/69 (NMC); 8.5 mi. SE of Cloudcroft on Hwy. 24 on open roadbank, Spellenberg 10/27/68 (NMC); Along Hwy 24, 7 mi. N of US 82, Spellenberg 8/10/69 (NMC).

Location:

Habitat

Dry gravelly banks, talus under cliffs, road cuts and montane slopes in Pinyon-Juniper, Ponderosa pine, and Douglas Fir habitat types.

Habitat Specificity: moderately broad

Elevation: 6850 - 8500 feet

Slope and Aspect: S-facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status: a colonizer of early successional stages

Community Types: Rocky Mountain Montane Conifer Forest, Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: May - October

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.78

Group: 7

a - score based on scorer's experience with species

Comments

Fairly common within its range.

References

Barneby, R. C. 1964. Atlas of North American *Astragalus*. *Memoirs of the New York Botanical Garden* 13:1-1188.

Besseyia oblongifolia Pennell

Sierra Blanca kittentails

Scrophulariaceae

Synonyms: none

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln, Otero, and Taos

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: Summit of Sierra Blanca, 11,500 ft, Wootton 8/16/1897 (US Nat. Herb); Summit of Sierra Blanca, 12,003 ft, Wootton 8/1/01 (NMC); On slopes of Sierra Blanca at end of ski area lift, Spellenberg 7/26/73 (NMC).

Location:

Habitat

Subalpine meadows

Habitat Specificity: moderately broad

Elevation: 11000 - 12000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Subalpine Grasslands

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: June - September

Threats

Ski Area development

Assessment

Geographic Range: 3
Range w/in Sacramentos: 5
Community Types: 5
Habitat Specificity: 3
Number of Populations: 3^a
Size of Populations: 1^a
Life History: 3
Threats: 1
Habitat Vulnerably: 1

Mean Score: 2.78

Group: 4
a - score based on scorer's experience with species

Comments

A species with disjunct populations. Species only known from Sierra Blanca and Latir Mesa (Taos county).

References

Pennell, F. W. 1933. A revision of *Syntheris* and *Besseyia*. *Proceedings of the Academy of Natural Sciences of Philadelphia* 85:77-106.

Castilleja wootonii Standley

Wooton's paintbrush

Scrophulariaceae

Synonyms: none

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Lincoln and Otero

Other States: Davis Mountains, Texas

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic:

Number of Known Populations:

Size of Populations:

Collection: Type: Gilmore's ranch on Eagle Creek in the White Mountains, 3400 ft, Wooton and Standley 3411 8/25/07; divide above Mescalero Agency (NE Otero County, White Mountains), Wooton 1905 ; White Mountain Peak (Sierra Blanca), Wooton 1897 & 1901; Cloudcroft area, Wooton 1899. Eagle Creek Canyon, T10S, R11E, S25, locally common on shady aspects, Soreng et al. 7/11/82 (NMC). Near Toboggan, 3.5 mi. W. of Cloudcroft in bottom of canyons, Spellenberg 8/10/69 (NMC).

Location:

Habitat

Canyon bottoms, dry montane slopes in Ponderosa pine or mixed conifer habitat types.

Habitat Specificity: moderately broad

Elevation: 7500 - 12000 feet

Slope and Aspect: steep, S-facing slopes

Edaphic Factors: granite faces

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: July - September

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	3
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 7

a - score based on scorer's experience with species

Comments

Nesom (1992) states that a population of plants thought to be endemic to the Davis Mountains of Texas, *C. cilata*, is in actuality conspecific with *C. wootonii*, a species previously thought endemic to the Sacramento Mountains. Dropped from state list—too common or widespread.

References

- Nesom, G. 1992. A new species of *Castilleja* (Scrophulariaceae) from south central Texas with comments on other Texas taxa. *Phytologia* 72(3):209-230.
- Standley, P. C. 1909. More southwestern *Castillejas*. *Muhlenbergia* 5:17-30.

Chrysothamnus spathulatus L. C. Anderson

Spoonleaf rabbitbrush

Asteraceae

Synonyms: *C. viscidiflorus* (Hook.) Nutt. ssp. *ludens* Shinnery

Status

FWS:

State: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Dona Ana, Eddy, Otero, Sierra, and Socorro

Other States: adjacent Texas—Guadalupe Mtns.

Distribution Outside New Mexico: ?

Ownership: BLM; FS; NM; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: "Upper Burro Flats" at 6000 ft between La Luz and La Boreita canyons, S14 & 15, T15S, R10E, Anderson 2052; High Rolls, Vaughn 2155 (AZ); NW of High Rolls, Jackson 8083 (NMC).

Location:

Habitat

Pinyon-Juniper zone & lower foothills- creosote bush areas

Habitat Specificity: broad

Elevation: 4400 - 7000 feet

Slope and Aspect: N- & W-facing slopes

Edaphic Factors: loamy, limestone or gypseous soils

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Interior Chaparral

Population Biology/Ecology

Life Form: shrub

Life Cycle:

Mode of Reproduction:

Pollinators:

Flowering Period: August - September

Threats

none known

Assessment

Geographic Range: 1
Range w/in Sacramentos: 5
Community Types: 3
Habitat Specificity: 1
Number of Populations: 1^a
Size of Populations: 5^a
Life History: 1
Threats: 1
Habitat Vulnerably: 1

Mean Score: 2.11

Group: 1
a - score based on scorer's experience with species

Comments

Dropped from state list—too common or widespread.

References

Anderson, L. C. 1964. Taxonomic notes on the *Chrysothamnus viscidiflorus* complex (Asteraceae, Compositae).
Madrono 17: 222-227.

Cirsium inornatum Wooton and Standley

Plain thistle

Asteraceae (Compositae)

Synonyms: *Carduus inornatus* Woot. & Standl.

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Cibola, Lincoln, Otero, Rio Arriba, and Taos

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: Sacramento Mountains near Cloudcroft, Wooton 8/24/01; North Eagle Creek, 2 mi. above forks, Wooton, 9/14/1899 (NMC); In White Mountains, Wooton and Standley, 8/25/07 (NMC); Along road edge, 9 mi. S of Cloudcroft, Spellenberg 9/9/73 (NMC); Sacramento Mtns, S35, T16S, R12E, common, Pase, 8/19/90 (NMC).

Location:

Habitat

In forest openings and along road-edges in Ponderosa pine and Doug-Fir forests.

Habitat Specificity: broad

Elevation: 7400 - 9000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: biennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: July - September

Threats

none known

Assessment

Geographic Range: 1
Range w/in Sacramentos: 3
Community Types: 5
Habitat Specificity: 1
Number of Populations: 1^a
Size of Populations: 1^a
Life History: 5
Threats: 1
Habitat Vulnerably: 1

Mean Score: 2.11

Group: 3
a - score based on scorer's experience with species

Comments

Pat Barlow of the University of New Mexico considers this a subspecies of *C. parryi*. Dropped from state list—too common or widespread.

References

Wootton, E. O. and P. C. Standley. 1915. *Flora of New Mexico*. Contributions from the United States National Herbarium Vol 19. Government Printing Office, Washington D. C.

Cirsium vinaceum Wooton and Standley

Mescalero thistle; Sacramento Mountain Thistle

Asteraceae (Compositae)

Synonyms: *Carduus vinaceus* Woot. & Standl.

Status

FWS: T

State: L1A

FS: L1

TNC: G2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Otero

Other States: no

Distribution Outside New Mexico: none

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 20 (64 subpopulations).

Size of Populations: Total approx. 49,000 plants

Collection: Type: In the Sacramento Mountains near Fresno, Wooton 7/12/1899; 1 mi. N of southern boundary of Mescalero Indian Reservation on Rt. 244, Owenby, 8/30/88 (NMC); Silver Springs Canyon, Todsén, 8/14/76 (NMC).

Location: Bluff Springs, Alamo Peak, Brown Canyon; Lucas Canyon; Silver Springs Canyon; Scott Able Canyon, Water Canyon

Habitat

Steep calcium carbonate deposits immediately adjacent to flowing springs; stream banks, streams and wet meadows.

Habitat Specificity: restricted

Elevation: 7500 - 9500 feet

Slope and Aspect: steep slopes

Edaphic Factors: wet travertine (calcium carbonate) deposits; wet calcareous soils

Natural Disturbance: none; recovers slowly from disturbance.

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest; springs

Population Biology/Ecology

Life Form: herb

Life Cycle: biennial

Mode of Reproduction: sexual; vegetative (root sprouting)

Flowering Phenology: polycarpic

Pollinators: generalist: hummingbirds, bees, beetles, flies and moths.

Flowering Period: July - September

Seed Dispersal: wind, possibly up to 1/2 mile seed dispersal

Threats

Reduction or loss of water supply—cattle, development, logging; competition from invading teasel and musk thistle; recreation; livestock grazing and trampling.

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	1
Size of Populations:	1
Life History:	1
Threats:	3
Habitat Vulnerably:	3

Mean Score: 3.00

Group: 4

Comments

Numerous areas exist where *C. vinaceum* was formerly distributed but no longer occurs (e.g. type locality and Hubble Canyon) or exists in low numbers. Populations reduced by livestock or competition with teasel. One population along Forest Service and Mescalero Indian Reservation boundary occupies historic habitat—stream banks and wet meadows throughout the Sacramentos. Other populations confined to spring areas and areas protected from grazing. Listed as threatened June 16, 1987 (52 FR 22936).

New Mexico State water law is a hindrance to the protection of this species—lack of in-stream-flow protection

References

Huenneke, L. F. and J. Thompson. 1995. *Conservation Biology*.

Thompson, J. Master Thesis, NMSU.

USFWS. 1991, 1992, & 1993. Sacramento Mountain thistle (*Cirsium vinaceum*) Recovery Plan. USFWS, Albuquerque, NM. (see references therein)

Wootton, E. O., and P. C. Standley. 1913. Description of new plants, etc. *Contr. U.S. Nat. Herb.* 16:109-196.

52 FR 22936, June 16, 1987, Final Rule

49 FR 20735, May 16, 1984 Proposed Rule

Crataegus wootoniana Eggleston

Wooton's hawthorn

Rosaceae

Synonyms:

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Catron and Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS, MIR

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: White Mountains, *North Eagle*, 1 1/2 miles above forks at 8000 ft, Turner 182, 5/22/89.

Location:

Habitat

Along streams

Habitat Specificity: broad

Elevation: 6500 - 8000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Riparian

Population Biology/Ecology

Life Form: small tree or shrub

Life Cycle:

Mode of Reproduction:

Pollinators:

Flowering Period: April - June

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	1
Number of Populations:	3 ^b
Size of Populations:	5 ^b
Life History:	1
Threats:	1
Habitat Vulnerably:	3

Mean Score: 2.78

Group: 1

a - score based on scorer's experience with genus

Comments

Moved from L3 status to L2 status on state list 1/6/94. Disjunct populations between the Sacramentos and the Mogollon Mountains. Very little is known of the abundance and potential threats to this species.

References

Eggleston, W. W. 1907. *Crataegus* in New Mexico. *Torreya* 7:235-236.

Cryptantha paysonii (Macbride) I. M. Johnston

Payson's hiddenflower, Payson's Cryptantha

Boraginaceae

Synonyms: *Oreocarya paysonii* Macbr.; *C. calceolus* var. *pubescens*

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: DeBaca, Lincoln, Otero, Sierra, and Socorro

Other States: adjacent Texas

Distribution Outside New Mexico: rare outside New Mexico

Ownership: BLM; FS; NPS; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: No collections made in Sacramento Mtns.

Location:

Habitat

Open slopes on limestone or gypsum soils

Habitat Specificity: moderately broad

Elevation: 4000 - 7000 feet

Slope and Aspect:

Edaphic Factors: limestone or gypsum soils

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Chihuahuan Desert Scrub, Semidesert Grassland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators: flies ?

Flowering Period: April - July

Threats

none known

Assessment

no assessment made for this species

Comments

Species moved from L2 status to L4 on state list 1/6/94. Common on several large areas of gypseous limestone in south-central New Mexico (Valley of Fires area)

References

- Higgins, L. C. 1971. A revision of *Cryptantha* subgenus *Oreocarya*. Brigham Young University Scientific Bulletin, *Biological Series* 13:1-63.

Cypripedium paysonii Willd.

Golden lady's slipper

Orchidaceae

Synonyms: *Cypripedium calceolus* var. *pubescens*

Status

FWS:

NM: L1C

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Catron, Grant, Otero, Rio Arriba, Santa Fe, and San Miguel

Other States: Canada to Arizona and Georgia

Distribution Outside New Mexico: more or less widespread outside New Mexico

Ownership:

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: No collections from the Sacramento Mtns.

Location:

Habitat

Associated with mature coniferous forest

Habitat Specificity: restricted

Elevation: 6,000 - 11,000 feet

Slope and Aspect: steep, N-facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status: late

Community Types: Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period:

Threats

collection; habitat modification

Assessment

no assessment made

Comments

Population(s) believed to be extinct in Otero county (Sivinski and Lightfoot 1994). Widespread, but rare. Species probably include for state protection because it is an Orchid.

References

Delphinium novomexicanum Wooton

New Mexico larkspur

Ranunculaceae

Synonyms: *Delphinium sierrae-blancae*

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: near Cloudcroft at 8850 ft, *Wooton* 7/31/1899; near Mescalero Agency, *Wooton* 219, 7/27/1897; Little Creek, White Mountains, *Turner* 95 7/30/1899.

Location: .

Habitat

open coniferous forest, meadows

Habitat Specificity: moderately broad

Elevation: 8,850 - 10,000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Subalpine Grasslands

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators: Broad tailed hummingbirds ?; Painted lady butterflies

Flowering Period: July - August

Threats

none known

Assessment

Geographic Range:	5
Range w/in Sacramentos:	3
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.33

Group: 4

a - score based on scorer's experience with species

Comments

In the forthcoming North America Flora Volume III, *D. novomexicanum* and *D. sierrae-blancae* are considered synonymous (D. Warnock pers. comm.)

References

Wootton, E. O. 1910. The larkspurs of New Mexico. *Bulletin of the Torrey Botanical Club* 37:31-42

Wootton, E. O. and P. C. Standley. 1915. *Flora of New Mexico*. Contributions from the United States National Herbarium Vol. 19. Government Printing Office, Washington D. C. 794 pp.

Echinocerus fendleri Engelman var. *kuenzleri* (Castetter, Pierce and Schwerin) L. Benson

Kuenzler's hedgehog cactus

Cartaceae

Synonyms: *Echinocerus kuenzleri* Castetter, Pierce & Schwerin; *E. hempelii*

Status

FWS: E

NM: L1A

FS: L1

TNC: G4T1, S1

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Chaves, Lincoln, and Otero.

Other States:

Distribution Outside New Mexico:

Ownership: BLM, FS; NM; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 3 with multiple subpopulations(?). Populations are concentrated in two areas—Ft. Stanton and Elk—with an outlier population at Nelson Canyon

Size of Populations: Total Population Size Ft. Stanton: 300 - 500 plants. Distribution (occurrences) Ft. Stanton Populations: 26 sites (< 10 plants), 19 sites (<25 plants), 5 sites (<50 plants), 3 sites (<100 plants), 1 site (>100 plants).

Collection:

Location: Ft. Stanton Area: S13, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36 T9S, R14E; S19, 31, T9S, 15E; S1, 2, 3, 9, 10, 11, 12, 13, 14, T10S, R14E; S6, T10S, R15E. Elk Area: S11, T16S, R15E; S5, 6, 7, 8, 10, 13, 15, 16, 17, 18, 19, 21, 29, 30, 32, 33, T16S, R16E.

Habitat

Limestone ledges, rock cracks, and gentle slopes in or just below pinyon - juniper woodlands.

Habitat Specificity: broad

Elevation: 5800 - 6400 feet

Slope and Aspect: stable slopes, less than 5%; south facing slopes

Edaphic Factors: limestone

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Plains and Great Basin Grassland

Population Biology/Ecology

Life Form:

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: May

Threats

Overcollection; habitat modification; possibly overgrazing, which may remove the thermal cover necessary to prevent frost damage; real estate development

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	1
Number of Populations:	3
Size of Populations:	3
Life History:	3
Threats:	5
Habitat Vulnerably:	1

Mean Score: 3.00

Group: 1

Comments

These cacti are difficult to see and juveniles are especially cryptic (Sivinski *pers. comm.*). Species is still abundant in many areas and unsurveyed habitat is large. However, population from type locality, near Elk, destroyed by road construction. Castetter *et al.* (1976) describe this variety as occurring in north-central Mexico, but FWS does not acknowledge these populations as the information was published in a non-peer reviewed journal. Listed as endangered October 26, 1979 (44 FR 61927).

References

- Castetter, E. F., P. Pierce, and K. H. Schwerin. 1976. A new cactus species and two new varieties from New Mexico. *Cactus and Succulent Journal* 68: 77-78.
- De Bruin, E. A. 1993. *Echinocerus fendleri* var. *kuenzleri* status summary of known populations. USFWS, Albuquerque, NM (see references therein)
- USFWS. 1985. Kuenzler hedgehog cactus (*Echinocerus fendleri* var *kuenzleri*) Recovery Plan. USFWS, Albuquerque, NM. (see references therein)
- 44 FR 61927, October 26, 1979 Final Rule.

Erigeron rybius Nesom

Sacramento Mountains fleabane

Asteraceae

Synonyms:

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; NM

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: 1.6 km S of Cloudcroft on Hwy. 84, 2520 m, Nesom 4535 8/30/81; 8 km NW of Ruidoso, canyon of N Fork Rio Ruidoso in open Ponderosa Pine, 2400 m, Bennett 8712 8/8/65; 8 km NW of Alto, near Monjeau lookout, steppe openings, 2730m, Moir 66-40 9/8/66; Alto, 2100m, Fisher 36181 7/21/36; 3.2 km N of Sierra Blanca Peak in meadows on ridges, 2940-3360 m, Moir 66-46 9/5/66; White Mountains, 2100m, Wooton 277 8/4/1897; Cox Canyon, D-Fir, Barlow 8/11/11; White Flats, S28, T16S, R15E, 1800m, Billbrey 2 7/21/63; near rent cabins above Cloudcroft, 2670m, Haynes 2738 8/14/68; 6.7 km SW of Cloudcroft on Hwy. 82 along small ravine, Haynes 2856 9/8/68; 11.2 km S of Cloudcroft on FS road toward Sunspot, 2670 m, Nesom 4537 8/30/81; 1.5 km S of Cloudcroft, Sleepy Grass Rd, 2520 m, Uttal 10031 7/20/73; N fork of Eagle Creek, common along creek (S36, T10S, R11E), Ward, 7/22/81 (NMC); Apache Canyon, Sleepy Grass Campground, 5 mi. S of Cloudcroft, Ward & Soreng 7/19/81 (NMC); 1.8 km S of Cloudcroft on Hwy 82, Nesom (NMC).

Location:

Habitat

Damp meadows and open ridges of Ponderosa pine, Doug-Fir, Spruce forest; forest openings and edges; roadsides.

Habitat Specificity: broad

Elevation: 7500 - 10,000 feet

Slope and Aspect: N-facing

Edaphic Factors: mesic soils; limestone

Natural Disturbance:

Successional Status:

Community Types: Subalpine meadows, Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: rhizomatous

Pollinators:

Flowering Period: May - June

Threats

none known

Assessment

Geographic Range:	5
Range w/in Sacramentos:	3
# Community Types:	1
Habitat Specificity:	1
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	1
Threats:	1
Habitat Vulnerably:	1

Mean Score: 1.67

Group: 2

a - score based on scorer's experience with species

Comments

Species is occasionally abundant in meadows and forest openings.

References

Cronquist, A. 1947. Revision of the North American species of *Erigeron*, north of Mexico. *Brittonia* 6(2):121-302.

Eriogonum jamesii Benthman in DC. var. *wootonii* Reveal

Wooton's buckwheat

Polygonaceae

Synonyms:

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private.

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: White Mountains, 7000 ft, *Wooton* 319 8/11/1897; White Mountains, Wooton, 7/6/1895 (NMC); 7 mi SE of Cloudcroft, Hess & Smith 8/21/73 (NMC); Summit, Capitan Peak 10,083 ft, Chadde 8/13/95 (NMC).

Location:

Habitat

Roadcuts and small openings, mixed conifer and spruce-fir forest; subalpine grasslands (*Festuca thurberi*-*Iris missouriensis*-*Danthonia parryi*); Oak-Rabinia woodlands.

Habitat Specificity: broad

Elevation: 6000 - 11500 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Forest, Subalpine Grasslands

Population Biology/Ecology

Life Form: herb, mat-forming

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: July - September

Threats

none known

Assessment

Geographic Range: 5
Range w/in Sacramentos: 1
Community Types: 1
Habitat Specificity: 1
Number of Populations: 1
Size of Populations: 3
Life History: 3
Threats: 1
Habitat Vulnerably: 1

Mean Score: 1.89

Group: 2

a - score based on scorer's experience with species

Comments

A common endemic. One of a number of rapidly evolving forms within the *E. jamesii* complex (Reveal 173 & 1976).

References

Reveal, J. L. 1973. *Eriogonum* (Polygonaceae) of Utah. *Phytologia* 25:169-217.

Reveal, J. L. 1976. *Eriogonum* of Arizona and New Mexico. *Phytologia* 34:409-484.

Escobaria villardii Castetter, Pierce and Schwerin

Villard's pincushion cactus

Cactaceae

Synonyms:

Status

FWS: C2

FS: L5

TNC: G2?, S2

NM: L1B

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 1

Size of Populations: Several 1000 along west escarpment

Collection: Type: Sacramento Mountains, east of Alamogordo, *Reaves 3984* 3/18/72; San Andres Canyon, Sivinski and McIntosh 2959.

Location: West escarpment of Sacramentos from Marble Canyon south to Loney Spring.

Habitat

Outcrops of limestone; desert slopes and ridges

Habitat Specificity: restricted

Elevation: 4500 - 6000 feet

Slope and Aspect: N- & W-facing slopes

Edaphic Factors: Silurian-Ordovician-Cambrian limestone and sandy Yeso formation soils

Natural Disturbance:

Successional Status: climax grassland

Community Types: Semidesert grassland and Interior Chaparral

Population Biology/Ecology

Life Form:

Life Cycle: perennial

Mode of Reproduction: Sexual

Pollinators:

Flowering Period: late April - mid May

Threats

Potential overcollection.

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	5
Size of Populations:	1
Life History:	3
Threats:	3
Habitat Vulnerably:	1

Mean Score: 3.44

Group: 4

Comments

References

Castetter, E. F., P. Pierce, and K. H. Schwerin. 1975. A reassessment of the genus *Escobaria*. *Cactus and Succulent Journal* 47:60-70.

Euphorbia wootonii Oudejans

Delicate Spurge; Wooton's Spurge

Euphorbiaceae

Synonyms: *Euphorbia delicatula* (Boiss.) Millsp; *Zygophyllidium delicatulum* Wooton & Standley

Status

FWS:

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Lincoln, Otero, and Sierra

Other States: adjacent Texas

Distribution Outside New Mexico: ?

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection:

Location: Upper San Andres Canyon

Habitat

Riparian areas:

Habitat Specificity: moderately broad

Elevation: 6000 - 7000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: annual

Mode of Reproduction:

Pollinators:

Flowering Period: June - September

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	5
Threats:	1
Habitat Vulnerably:	3

Mean Score: 2.56

Group: 7

a - score based on scorer's experience with species

Comments

Martin and Hutchins (1980) state that this species is endemic to the mountains of southcentral New Mexico. While, Correll and Johnston (Flora of Texas, 1979) give species range as Davis Mtns, Trans-Pecos TX, and NM. Oudejans (1989) argues that *delicatula*, the epithet Martin and Hutchins use, is not available for the genus *Euphorbia* and the correct name is *E. wootonii*.

References

- Martin, W. C. and C. R. Hutchins. 1980. *A flora of New Mexico*. Vols. I & II. J. Cramer, Hirschberg, Germany.
- Oudejans, R. 1989. New names and new combinations in the genus *Euphorbia*

Hedeoma pulcherrimum Wooton and Standley

Mescalero pennyroyal

Lamiaceae (Labiatae)

Synonyms:

Status

FWS: 3C

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: White Mountains, 1950 m, Wooton 241 7/30/1897 (US Nat. Her. no. 330465); Cloudcroft, Wooton 6/30/1899; Tularosa Creek, Wooton 8/18/1899, 8/6/01; Dark Canyon, White Mountains, Wooton and Standley 3480, 1907; Mescalero Reservation, Wooton 7/21/05; Mescalero Reservation, 7/21/05 (NMC); Canyon N of Cloudcroft, scattered, Chapline 9/11/15 (NMC); 1 mi. N of Cloudcroft in open meadow at spruce-fir forest margin, Dunn 7/29/51 (NMC).

Location:

Habitat

Montane slopes and dry soils in coniferous forest

Habitat Specificity: broad

Elevation: 5000 - 9000 feet

Slope and Aspect: W-facing slopes; 10°

Edaphic Factors: clay, loam, limestone

Natural Disturbance:

Successional Status: climax

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators: insects, moths, bees, butterflies

Flowering Period: June - September

Threats

Development in Cloudcroft area; possibly grazing.

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	1
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.33

Group: 4

a - score based on scorer's experience with species

Comments

Plant does well in open, moderately disturbed habitat and readily colonizes road cuts (Irving 1980b). Hybridizes with *H. drummondii* var. *drummondii* (Irving 1980b). Species may be self-compatible, i.e. inbred to a certain degree (Irving 1980b). Removed from consideration for federal protection 12/15/80 (Federal Register).

References

- Epling, C. and W. Stewart. 1939. A revision of *Hedeoma* with a review of allied genera. *Repert. Sp. Nov. Bieh.* 115:1-150.
- Irving, R. S. 1980a. Status report for *Hedeoma pulcherrimum*. USFWS.
- Irving, R. S. 1980b. The systematics of *Hedeoma* (Labiatae). *Sida* 8(3):218-295.

Hedeoma todsenii Irving

Todsen's pennyroyal

Lamiaceae (Labiatae)

Synonyms:

Status

FWS: E

NM: L1A

FS: L1

TNC: G2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Dona Ana, Otero and Sierra

Other States:

Distribution Outside New Mexico:

Ownership: BLM; DOD; FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 16 (13 in the Sacramento Mountains and 3 in the San Andres Mountains)

Size of Populations: Distribution: 3 populations < 500 stems; 6 populations > 1,000 stems; 1 population > 5,000 stems; 1 population > 10,000 stems; 1 population > 50,000 stems; 1 population > 100,000 stems.

Collection: West tributaries of Nogal Canyon, Sivinski 1556.

Location: Otero Co.: S3, 4, 9, 10, 28, 33, 34, T13S, R11E

Habitat

Steep north facing shaded slopes in mid elevation pinyon - juniper, mesic areas; sandy gypseous-limestone soils.

Habitat Specificity: restricted

Elevation: 6,600 feet

Slope and Aspect: steep (30 - 70%), N- & E- facing slopes; also, nearly level terraces of intermittent streams

Edaphic Factors: Rocky, gypseous soils of the Permian-Yeso Formation

Natural Disturbance:

Successional Status: Climax

Community Types: Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: seed & vegetative, but primarily vegetative—subterranean rhizomes

Timing of Reproduction:

Flowering Phenology: asynchronous; 1- 10% of the population flowering at any one time

Pollinators: hummingbirds (?)

Flowering Period: June - September

Seed Set: 1.6 - 2.3 nutlets per flower, approx. 25% of a population set seed per year.

Seed Dispersal: gravity

Germination: low

Threats

Possibly pollinator limited as there is a lack of other red-flowering species in the area to attract hummingbirds.

Assessment

Geographic Range:	3
Range w/in Sacramentos:	3
# Community Types:	5
Habitat Specificity:	5
Number of Populations:	1
Size of Populations:	1
Life History:	1
Threats:	3
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 5

Comments

A narrow endemic and relict species of the Tularosa Basin. Species may be self-compatible (Irving 1980b). Listed as endangered 8/6/81 (46 FR 40025).

References

Hueneke, L. F. 1993. Interaction of breeding system and genetic structure in *Hedeoma todsenii* (Lamiaceae), a rare mint of New Mexico. Final Report to the Center for Plant Conservation and New Mexico Division of Forestry.

Irving, R. S. 1979. A new and rare species from New Mexico. *Madrono* 26(4):184-187

Irving, R. S. 1980. Status report from *Hedeoma todsenii*. USFWS.

Irving, R. S. 1980b. The systematics of *Hedeoma* (Labiatae). *Sida* 8(3):218-295.

USFWS. 1993. Todsen's Pennyroyal (*Hedeoma todsenii*) Recovery Plan. Draft. USFWS, Albuquerque, NM (see references therein)

USFWS. 1985. Todsen's Pennyroyal (*Hedeoma todsenii*) Recovery Plan. USFWS, Albuquerque, NM (see references therein)

46 FR 5730, Jan. 19, 1981 Final Rule

45 FR 49858, July 25, 1980 Proposed Rule

Heuchera wootonii Rydberg

Wooton's alumroot

Saxifragaceae

Synonyms:

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Catron and Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: Gilmore's Ranch, White Mountains, Wooton, 7/27/01, 283; Cloudcroft, Wooton, 6/30/1899 (NMC); James Canyon, Wooton 8/3/1899 (NMC); Ruidoso, 6600', Wooton, 6/29/1895 (NMC); 2 mi. above forks, North Eagle Creek, Turner 9/1/4/1899 (NMC).

Location:

Habitat

Wooded mountain slopes and protected, usually on rock outcrops.

Habitat Specificity: moderately broad

Elevation: 6600 - 12000 feet

Slope and Aspect: N-, W-, & S- facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Subalpine Grasslands

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: June - September

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	3
# Community Types:	1
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	5 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 1

a - score based on scorer's experience with species

Comments

Sacramento Mountain plants appear to be a hirsute (pubescent with stiff coarse hairs) variation of *H. parvifolia*. Disjunction between Lincoln and Catron county populations.

References

Small, J. K. and P. A. Rydberg. 1905. Saxifragaceae, Hydrangeaceae. *North American Flora* 22: 81-158.

Hexalectris nitida L. O. Williams. in Johnston

Shining coral-root

Orchidaceae

Synonyms:

Status

FWS: C2

NM: L1

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: no

Geographic Range: Wide

New Mexico Counties: Eddy

Other States: adjacent Texas and Mexico

Distribution Outside New Mexico: rare outside New Mexico

Ownership: FS; other

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection:

Location:

Habitat

Shaded places on canyon slopes, oak woodlands.

Habitat Specificity: restricted

Elevation:

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Madrean Evergreen Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: June - August

Threats

Extreme rarity; collection

Assessment

no assessment made

Comments

A saprophytic orchid. Possibly may occur in the Sacramento Mountains (Lincoln NF—Cloudcroft, Guadalupe, and Mayhill Ranger Districts). This rare orchid has been only seen once in New Mexico in the Guadalupe Mountains in 1977.

References

Hexalectris spicata (Walter) Barnhart

Crested coral-root

Orchidaceae

Synonyms:

Status

FWS:

NM: L1C

FS:

TNC: G4, S2

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Eddy, Lincoln, Otero, and Sierra

Other States: West Virginia south to Florida; West to New Mexico and Mexico

Distribution Outside New Mexico: relatively common outside New Mexico

Ownership:

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Ridge above Algerita Springs (S2, T19S, R11E) in *Quercus undulata* in open Pinyon-Juniper, Todsens 9/1/91 (NMC); Rocky, SW facing limestone slope among Pinyon-Juniper and Oak, Sixteen Springs Canyon (SE1/14, S24, T15S, R14E), Todsens 8/21/69 (NMC).

Location:

Habitat

Dry open oak, Pinyon-Juniper woodlands

Habitat Specificity: restricted

Elevation: 6800 - 7500 feet

Slope and Aspect: SW-facing slopes

Edaphic Factors: limestone

Natural Disturbance:

Successional Status:

Community Types: Madrean Evergreen Woodland (Southwest only)

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: June - August

Threats

collection

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	5
Number of Populations:	3 ^a
Size of Populations:	5 ^a
Life History:	3
Threats:	3
Habitat Vulnerably:	1

Mean Score: 3.44

Group: 6

a - score based on scorer's experience with species

Comments

A widespread orchid, east of New Mexico, but rare in New Mexico. Usually comes up after a rain, and it is possible that species is more common than currently thought.

References

Ionactis elegans (Soreng and Spellenberg) Nesom

Sierra Blance cliff daisy; Elegant cliff daisy; Showy least daisy

Asteraceae

Synonyms: *Chaetopappa elegans* Soreng & Spellenberg

Status

FWS: C2

NM: L2

FS: L1

TNC: G2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations: 3

Size of Populations: Eagle Creek Populations no more than 200 plants; Three Rivers, quite extensive, up to a 1000 plants.

Collection: Type: Eagle Creek canyon on the NE flank of Sierra Blanca at 2500 m, East edge S 26, T10S, R12E, Soreng, Spellenberg and Ward 2026 7/11/82. (NY Botanical Garden)

Location: Eagle Creek Canyon S25 & 26, T10s, R12E (2 pops); Three Rivers S36, T10S, R11 W (1 pop)

Habitat

Cliff faces

Habitat Specificity: restricted

Elevation: 8,200 feet

Slope and Aspect: E- & W-facing slopes

Edaphic Factors: cracks in syenite rock (igneous rock consisting of alkali feldspar and other minerals)

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators: generalist: insects.

Flowering Period: May - June

Seed Dispersal: possibly wind

Threats

Possibly air pollution.

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	5
Number of Populations:	3
Size of Populations:	3
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 3.44

Group: 4

Comments

Known only from 3 populations, but fairly common in its limited habitat.

References

- Knight, P. J. and A. C. Cully. 1986. Status report on *Chaetopappa elegans*. USFS, Albuquerque, NM.
(see references therein)
- Nesom. 1992. Transfer of *Chaetopappa elegans* to *Ionactis* (Asteraceae: Astereae). *Phytologia* 73: 416-424
- Soreng, R. and R. Spellenberg. 1984. An unusual new *Chaetopappa* (Asteraceae: Astereae) from New Mexico. *Systematic Botany* 9(1):1-5.

Lesquerella aurea Wooton

Golden bladderpod

Brassicaceae

Synonyms: none

Status

FWS: 3C

NM: L2

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; NM; private

Distribution - Sacramento Mountains

Local Endemic: yes (see comment below)

Number of Known Populations: 12 (1981 data)

Size of Populations: Distribution: 2 populations < 10 plants; 1 population < 100 plants; 7 populations < 250 plants; 1 population < 500 plants; 2 populations < 1000 plants; 1 population > 10,000 plants (7/18-19/81 data)

Collection: Type: On the S fork of Tularosa creek, 3 miles E of the Mescalero Agency in the White Mountains, 1950 m, on hillsides, Wooton 25 7/30/1897; vicinity of Cloudcroft, Wooton 1899; near junction of Hwys. 83 & 24, east of Cloudcroft, Barclay & Perdue 813; 2 miles east of Cloudcroft on Hwy. 83, Barclay & Thompson 1014; James Canyon near Cloudcroft, Barlow 1911; Lookout Point on Rim trail north of Cloudcroft, Corell & Corell 37860; Mayhill Ranger Station (possibly an introduction) Wiltbank; Toboggan, Wooton 1905; Cox Canyon, Castetter 9545; Roadcut on Sunspot Highway, Sivinski 1552; Canyon N of Cloudcroft, Chapline 9/11/15 (NMC); S-facing slope, S21, T16S, R12E, Wagner & Sobo 7/28/77 (NMC); Apache Canyon, Sleepy Ground Campground, N part of S5, T12E, R12E, Soreng & Ward 7/18/81 (NMC); Upper Cox Canyon, 1.5 mi. S of Cloudcroft, S5,6, &8, T16S, R12E, 10,000 plants, Soreng & Ward 7/18/81 (NMC); Upper La Luz Canyon, where joined by Bailey Canyon Rd., S23, T15S, R12E, Soreng & Ward 8/28/81 (NMC); S edge of Mescalero Indian Reservation, SW1/4 S14, T15S, R12E, Soreng & Ward, 7/18/81 (NMC); Upper James Canyon on US 82, mile post 18, SE1/4 S18, T15S, R12E, Soreng & Ward 7/18/81 (NMC).

Location: S14, S21, S23, S25, S35, S36 T15S, R12E; S31, T15S, R 13E; S2, T16S, R11E; S5, S6, S6 T16S, R12E; (see Soreng 1981 for specific population location)

Habitat

Open rocky slopes in Pinyon-Juniper, Ponderosa pine, Oak, Doug-Fir, and Aspen forests; forest openings; disturbed soils--roadcuts, logged areas.

Habitat Specificity: moderately broad

Elevation: 6500 - 9000 feet

Slope and Aspect: 15 - 70% slopes; S- & SW-facing slopes

Edaphic Factors: limestone of the Yeso Formation or colluvium over Yeso Limestone; stable brown-stony-clay-loam soils; cobbly, rocky limestone lacking litter.

Natural Disturbance:

Successional Status: early colonizer of bare ground

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: winter annual

Mode of Reproduction: sexual

Pollinators: bees and flies

Flowering Period: June - September

Seed Set: low; approx. 4 seeds per flower, 10 - 15 flowers per plant per year

Seed Dispersal: gravity

Threats

Disturbance prior to seed set.

Assessment

Geographic Range:	5
Range w/in Sacramentos:	3
# Community Types:	5
Habitat Specificity:	3
Number of Populations:	1
Size of Populations:	1
Life History:	5
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.78

Group: 4

Comments

A narrow endemic but probably was more widely distributed at one time. Soreng (1981) hypothesizes that current restricted distribution is a result of the warming and drying trends since the last glaciation. Population size can fluctuate widely. Soreng (1981) reports that one population went "from practically nonexistent, to in one case, over 10,000 individuals." Population dynamics, like other annuals, dependent on temperature and rainfall patterns. A candidate for federal protection Federal Register, 12/15/80, but dropped from consideration.

Wootton describes collecting this species at Luna, western Socorro county, but this was probably *L. goodingii*, a similar looking species (Sivinski *pers. comm.*).

References

- Rollins, R. C., and E. A. Shaw. 1973. *The genus Lesquerella (Cruciferae) in North America*. Harvard University Press, Cambridge, MA.
- Soreng, R. 1981. Status report on *Lesquerella aurea*. USFWS, Albuquerque, NM. (see references therein)
- Wootton, E. O. 1898. New plants from New Mexico. *Bulletin of the Torrey Botanical Club* 25:257-264.

Lilium philadelphicum var. *andinum* (Nutt.) Ker-Gawl.

Mountain Lily

Liliaceae

Synonyms: *Lilium umbellatum*; *Lilium. montanum* A. Nels.

Status

FWS:

NM: L1C

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Los Alamos, Otero, Rio Arriba, Sandoval, Santa Fe, San Miguel

Other States: Alberta south to New Mexico; East to Ohio and Arkansas.

Distribution Outside New Mexico: more or less widespread outside New Mexico

Ownership: FS; other??

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 2

Size of Populations:

Collection: Fresno, Sacramento Mtns, Wootton 7/21/1899 (NMC).

Location: Silver Springs

Habitat

Wet meadows (In other parts of range associated with mature coniferous forest)

Habitat Specificity: restricted

Elevation:

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest, Rocky Mountain Subalpine Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: June - August (or later with autumnal rains)

Threats

Collection; habitat loss.

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	3
Size of Populations:	5
Life History:	3
Threats:	3
Habitat Vulnerably:	3

Mean Score: 3.44

Group: 6

Comments

Species was probably historically more abundant in the Sacramento Mountains as wet meadow communities were more common in the past then now. The loss of wet meadows is a result of livestock grazing. The species is widespread, but rare in New Mexico.

References

McIntosh, J. A. 1950. *Transactions of the Wisconsin Academy of Sciences* 40(1):226

Lupinus sierrae-blancae Wooton and Standley

Sierra Blanca lupine

Fabaceae (Leguminosae)

Synonyms:

Status

FWS:

NM: L2

FS:

TNC: G3, S3

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: On the lower part of White Mountain Peak (Sierra Blanca), 2340 m, Wooton 7/6/1895 (US Nat. Her. no. 562220); Head of Pierce Canyon, Capitan Mtns, 8/21/20 Hendricks 8/21/20 (NMC); Along roadbank on road to Ski Apache, Spellenberg 7/26/73 (NMC); On road to ski area, about 1 mi. below, Spellenberg 7/8/73 (NMC).

Location:

Habitat

Meadows, open slopes, near streams, and roadbanks.

Habitat Specificity: broad

Elevation: 7000 - 10000 feet

Slope and Aspect: S-facing slopes

Edaphic Factors: dark, loamy soils

Natural Disturbance:

Successional Status:

Community Types: Subalpine grasslands

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators: butterflies

Flowering Period: June - September

Threats

none known

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	1
Number of Populations:	1
Size of Populations:	1
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score:	2.56
-------------	------

Group:	4
--------	---

Comments

Appears to increase in abundance with disturbance. Wooton and Standley (1913) describe this species as "a conspicuous feature of the vegetation where it occurs" (pg. 138)

References

Wooton, E. O., and P. C. Standley. 1913. New plants from New Mexico. Contr. U.S. Nat Herb 16:109-196.

Lupinus sierrae-blancae Wooton and Standley, ssp.
aquilinus
(Wooton and Standley) Fleak and D. Dunn

Eagle Creek lupine

Fabaceae

Synonyms: *Lupinus aquilinus* Wooton & Standley

Status

FWS:

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln

Other States:

Distribution Outside New Mexico:

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type *L. aquilinus*: Gilmore's Ranch, on Eagle Creek, White Mountains, 2220 m, Wooton and Standley 3613 8/25/07 (US Nat. Her. 562095) Ruidoso Creek, Wooton 1895.

Location:

Habitat

Habitat Specificity: restricted

Elevation:

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period:

Threats

none known

Assessment

no assessment made – taxonomic problems

Comments

The taxonomy of this subspecies is questionable, particularly since it is sympatric with *L. sierrae-blancae*. This subspecies is possibly a variety of *L. sierrae-blancae*.

Until recently *L. aquilinus* considered to be a separate species, but now is considered synonymous with *L. sierrae-blancae* ssp. *aquilinus*. In the *Flora of New Mexico*, Wootton and Standley describe collecting *L. aquilinus* in the Sierra Grande, Union county!?

References

Malaxis tenuis (Watson) Ames

Slender adder's mouth

Orchidaceae

Synonyms: none

Status

FWS:

NM: L1

FS:

TNC: G4, S1

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Otero and Sierra

Other States: adjacent Arizona, Mexico

Distribution Outside New Mexico: more or less widespread outside New Mexico

Ownership:

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Silver Springs Canyon, S21, T15S, R13E, on rocky, NW-facing slope under mixed pine, fir, and spruce forest, Todsén 8/15/64.

Location:

Habitat

Understory of mixed conifer forest

Habitat Specificity: moderately broad

Elevation: 7000 - 8000 feet

Slope and Aspect: NW-facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status: late

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction: sexual

Pollinators:

Flowering Period: July - August

Threats

grazing, logging.

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	3
Number of Populations:	5
Size of Populations:	5
Life History:	3
Threats:	3
Habitat Vulnerably:	3

Mean Score: 3.67

Group: 6

Comments

Silver Springs Canyon population extirpated (Sivinski *pers. comm.*) and species may be extirpated from the Sacramento Mountains. It is doubtful, if *M. tenuis* ever had a viable population(s) in the Sacramentos as it is a rare orchid that reaches its northern most distribution in New Mexico. Species has mostly Mexican distribution and is peripheral to NM flora. Occurs in association with mature coniferous forest. Species is not particularly appealing to orchid collectors, but maybe susceptible to habitat modification due to grazing and logging.

References

Mammillaria wrightii Engelman var. *wrightii*

Wright's pincushion cactus

Cactaceae

Synonyms: *Neomammillaria wrightii* Britt & Rose; *Chilita wrightii* Orcutt; *Ebnerella wrightii* F. Buxbaum

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Bernalillo, Catron, Dona Ana, Guadalupe, Lincoln, McKinley, Sandoval, Santa Fe, Sierra, Socorro, Torrance, and Valencia.

Other States: adjacent Texas and Arizona

Distribution Outside New Mexico: rare outside New Mexico

Ownership: BLM; FS; private.

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection:

Location:

Habitat

Gravelly hills, sandy hills, or plains; desert grasslands to pinyon - juniper

Habitat Specificity: broad

Elevation: 3000 - 7000 feet

Slope and Aspect:

Edaphic Factors: clay soils

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodlands, Plains and Great Basin Grassland, Semidesert grassland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: May - August

Threats

overcollection; urbanization; habitat alteration by ranching operations and fire suppression.

Assessment

no assessment made—spp. possibly occurs in the Sacramentos, but no known records

Comments

A widespread, but uncommon species. Moved from L1 to L2 status on the state list 1/6/94 because cactus is more widespread than previously believed and is proposed to be deleted from the state endangered species list.

References

Benson, L. 1982. *The Cactaceae of the United States*. Stanford University Press

Zimmerman, A. D., and D. A. Zimmerman. 1977. A revision of the United States taxa of the *M. wrightii* complex with remarks on the northern Mexico population. *Cactus and Succulent Journal* 49:23-35.

Opuntia clavata Engelmann

Dagger-thorn cholla

Cactaceae

Synonyms:

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Bernalillo, Cibola, Dona Ana, Guadalupe, Lincoln, Otero, Rio Arriba, Sandoval, San Miguel, Santa Fe, Socorro, Torrance, and Valencia.

Other States:

Distribution Outside New Mexico:

Ownership: BLM; DOD; FS; FWS; NM; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Near Carrizozo, 4000 ft, Wooton 7/22/01 (NMC)

Location:

Habitat

Sandy soils of valleys and grasslands.

Habitat Specificity: restricted

Elevation: 4000 - 8000 feet

Slope and Aspect: W

Edaphic Factors: sandy, gravelly loam

Natural Disturbance:

Successional Status:

Community Types: Semidesert grasslands

Population Biology/Ecology

Life Form: mat-forming

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: April - July

Threats

none known

Assessment

no assessment made—species may possibly occur in the Sacramento Mtns., but no known records.

Comments

A low-mat forming cholla. Dropped from the state list—too common or widespread. Common in the Rio Grande valley and adjacent drainages.

References

Benson, L. 1982. *The Cactaceae of the United States*. Stanford University Press

Pediocactus papyracanthus (Engelmann) L. Benson

Paper-spined plains cactus; Grama grass cactus.

Cactaceae

Synonyms: *Toumeyia papyracantha* (Engelm.) Britt. & Rose; *Mammillaria papyracantha* Engelmann; *Echinocactus papyracanthus* Engelmann; *Sclerocactus papyracanthus* N. P. Taylor

Status

FWS: C2

NM: L1B

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Bernalillo, Cibola, Dona Ana, Eddy, Grant, Lincoln, Los Alamos, Otero, Rio Arriba, Sandoval, Santa Fe, Socorro, Torrance, and Valencia.

Other States: adjacent Arizona and Texas

Distribution Outside New Mexico: relatively common in Arizona and Texas.

Ownership: BLM; DOD; FS; NM; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection:

Location:

Habitat

Grama and galleta grasslands, usually where soil is sandy, rarely on gypseous soils. Grows under the protective cover of Grama grass.

Habitat Specificity: moderately broad

Elevation: 5000 - 7300 ft feet

Slope and aspect: gentle slopes

Edaphic Factors: sandy or gypseous soil

Natural Disturbance:

Successional Status:

Community Types: Semidesert Grassland, Great Basin Conifer Woodland Plains, Great Basin Grassland

Population Biology/Ecology

Life Form:

Life Cycle: perennial

Flowering Phenology:

Pollinators:

Flowering Period: April - June

Threats

Overcollection; overgrazing; habitat loss due to urbanization.

Assessment

no assessment made – species may possibly occur in the Sacramento Mtns, but no known records.

Comments

This cactus was probably once abundant in central New Mexico, but degradation and overgrazing of rangeland has sharply reduced abundance throughout its range. However, still common in the Tularosa Basin. Proposed to be moved from L1 to L2 status on state list. An inconspicuous plant, often overlooked since the spines resemble the dried leaves of grass.

References

Benson, L. 1962. A revision and amplification of *Pediocactus* II. *Cactus and Succulent Journal* 35:57-61.

Benson, L. 1982. *The Cactaceae of the United States*. Stanford University Press

Penstemon alamosensis Pennell and Nisbet

Alamo Canyon beard tongue

Scrophulariaceae

Synonyms: none

Status

FWS: C2

NM: L2

FS: L1

TNC: G2, S2

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Dona Ana and Otero

Other States:

Distribution Outside New Mexico:

Ownership: BLM; DOD; FS; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 7

Size of Populations: Total populations size: 2374; Alamo (including Caballero, Purgatory, & Deadman): 646 plants; Deadman: 92 plants; Dog: 414 plants; Escondido: 202 plants; Mule: 32 plants; Negro Ed: 510; Rock face N of Negro Ed: 46 plants; San Andres: 506 plants. (1988 data)

Collection: Type: a limestone crevice of a dry, rocky wash in Alamo Canyon, west slope of the Sacramento Mountains, about 5 miles SE of Alamogordo Nisbet 817 (Acad. Nat. Sci. Philadelphia); Dry Canyon, Sacramento Mountains, Rehn & Viereck; Dog Canyon, Sacramento Mountains, Castetter and Nisbet 8136 6/5/55 (UNM); Mouth of Dog Canyon, 4400', Todsén 4/26/70 (NMC); Marble Canyon, SW1/4 S26, T16S, R10E, Spellenberg, 5/11/80 (NMC).

Location: Alamo Canyon, Deadman, Dog Canyon (near mouth), Dry (?), Escondido, Lead, Marble (?), Mule, Negro Ed, and San Andres Canyons; also midway between Dead Man and Mule Canyon.

Habitat

Open sites of canyon bottoms, dry washes, limestone crevices of rocky limestone hillsides, rocky outcrops, and at the foot of limestone cliffs.

Habitat Specificity: moderately broad

Elevation: 4400 - 6300 feet

Slope and Aspect: north, northeast, or northwest facing slopes; steep slopes or rock ledges

Edaphic Factors: Pennsylvanian limestone; rocky, clayey, or gravelly soil derived from limestone.

Natural Disturbance: Disturbance that opens up the site

Successional Status:

Community Types: Interior Chaparral, Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators: hummingbirds (?)

Flowering Period: April - June

Seed Set: highly variable—low during dry years

Seed Dispersal: gravity

:

,

.

-

,

,

Population Biology/Ecology (con't)

Germination: Native Plants of the Southwest nursery reports that seeds germinate well after cold treatment

Threats

Grazing—cattle and wildlife; overcollection; rarity.

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3
Size of Populations:	1
Life History:	3
Threats:	3
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 7

Comments

An endemic of the Tularosa Basin, it is known from the Sacramento Mountains and the San Andres Mountains on White Sands Missile Range. When there is ample winter moisture the plant is fairly abundant, but drought reduces population number. Two possible extinct populations: Marble Canyon, was not surveyed in 1988, but reported to have plants there by Spellenberg (1981), and Dry Canyon, a historic record, was surveyed in 1988 but no plants found.

Species greens up early and spring and is therefore vulnerable to grazing. White Sands Missile Range provides *de facto* protection from *Penstemon* collectors. Species may be self-incompatible (Spellenberg 1981). Nisbet and Jackson (1960) consider *P. alamosensis* synonymous with *P. harvardii* Gray of Trans-Pecos Texas. Moved from L1 to L2 status on state list 1/6/94.

References

- Nisbet, G. T., and R. C. Jackson. 1960. The genus *Penstemon* in New Mexico. *University of Kansas Science Bulletin* 41(5):691-759
- Spellenberg, R. 1981. Status report on *Penstemon alamosensis*. USFWS
- USFS. 1988. *Penstemon alamosensis* survey. Cloudcroft Ranger District, Lincoln National Forest, Alamogordo, NM
- USFS. Interim management plan for *Penstemon alamosensis* (Alamo Canyon beard tongue). Lincoln National Forest, Alamogordo, NM

Penstemon cardinalis Wooton and Standley ssp. *cardinalis*

White Mountain beard tongue; scarlet Penstemon

Scrophulariaceae

Synonyms: *Penstemon crassulus* Wooton

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States:

Distribution Outside New Mexico:

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: White Mountain Peak (Sierra Blanca) just above the forks of Ruidoso Creek, 2400 m, *Wooton* 7/6/1895 (US Nat. Her. no 563916); Capitan Pass, Capitan Mountains, *Nisbet* 747 7/5/40 (UNM); Capitan Mountains, *Hendricks* 36103 (USFS, RO, Albuquerque); Sierra Blanca Peak, Wolf 2871, (CI); In soil pockets on granite cliffs in canyon 2mi above Three Rivers Campground, White Mtn. Wilderness, Todsén 6/24/73 (NMC).

Location:

Habitat

Rocky outcrops, slopes and canyon bottoms in association with Ponderosa pine, Douglas fir and Gambel's oak

Habitat Specificity: moderately broad

Elevation: 7000 - 8800 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Flowering Phenology:

Pollinators:

Flowering Period: June - July

Threats

none known

Assessment

Geographic Range:	5
Range w/in Sacramentos:	3
# Community Types:	5
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	5 ^a
Life History:	3
Threats:	3
Habitat Vulnerably:	1

Mean Score: 3.44

Group: 1

a - score based on scorer's experience with species

Comments

A geographically widespread species, but found in small populations. Apparently, no real threats from collectors as nursery grown seed is available. Also, some populations have *de facto* protection from collectors since several populations occur on military land and national parks and the plant is difficult for the casual collector to locate. Moved from L1 to L2 status on state list 1/6/94. However, some populations are threatened, but overall species not threatened with extinction in NM.

References

Nisbet, G. T., and R. C. Jackson. 1960. The genus *Penstemon* in New Mexico. *University of Kansas Science Bulletin* 41(5):691-759.

Wootton, E. O., and P. C. Standley. 1913. New plants from New Mexico. *Contr. U.S. Nat Herb* 16:109-196.

Penstemon neomexicanus Wooton and Standley

New Mexican Penstemon

Scrophulariaceae

Synonyms:

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Lincoln and Otero

Other States: Mexico

Distribution Outside New Mexico: ?

Ownership: FS; MIR; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: in pine woods near Gilmore's Ranch on Eagle Creek in the White Mountains, 2250 m, Wooton and Standley 3507 8/15/07 (US Nat. Her. no. 561371; Capitan Mountains, Earle 200 1900; James Canyon, Wooton 8/5/1899; Cloudcroft, 2550m, Fisher 23 1909; White Mountain Peak (Sierra Blanca), Wooton 8/1/01; Wingfields Ranch, Wooton 7/1895; Mescalero Reservation, Wooton 7/21/05; Ruidoso Creek, 1980m, Wooton 7/3/1895; 2 miles W of Capitan, Castetter 5896 8/14/52 (UNM); Nogal Lake, Nisbet 765 7/3/40; Capitan Pass, NE of Capitan, Nisbet 748 7/5/40 (UNM); S Fork of Little Eagle Creek, Nisbet 768 7/4/70 (UNM); Pine Lodge, Capitan Mountains, Castetter 5898 8/16/52 (UNM); 2 miles above Bonita Dam, Gordon & Dunn 744 8/18/49 (UNM); 5.6 miles NW of Mayhill, Gordon & Norris 574 8/13/49; Karr Canyon, Sacramento Mountains, Castetter 5987 8/3/52 (UNM); 3 miles N of Alto, Nisbett 766 (NY); Indian Pass E of Carrizozo, Worth 539; Cloudcroft at Rolland Canyon, Eggleston 1449a.

Location:

Habitat

Wooded slopes and glades in pine woodlands.

Habitat Specificity: broad

Elevation: 6000 - 9000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Flowering Phenology:

Pollinators:

Flowering Period: July - August

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	1
# Community Types:	3
Habitat Specificity:	1
Number of Populations:	1 ^a
Size of Populations:	1 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 1.44

Group: 3

a - score based on scorer's experience with species

Comments

Wooton and Standley (1913) describe this species as a "very common plant of the higher parts of the Sacramento, White, and Capitan Mountains" and the plant has been collected extensively. The plant was dropped from state list because it was too common or widespread. Crosswhite (1967) reports this species as occurring in the Sierra Madre Occidental of northern Chihuahua, Mexico.

References

- Crosswhite, F. S. 1967. Revision of *Penstemon* Section *Habroanthus* (Scrophulariaceae) III: Series *Virgati*. *American Midland Naturalist* 77:28-41.
- Nisbet, G. T., and R. C. Jackson. 1960. The genus *Penstemon* in New Mexico. *University of Kansas Science Bulletin* 41(5):691-759

Philadelphus wootonii Hu

Wooton's mockorange

Hydrangeaceae

Synonyms:

Status

FWS:

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States: no

Distribution Outside New Mexico: none

Ownership:

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations:

Collection: Type: Wooton, Gavilan Canyon, White Mountains, 7/23/05; Rehder 372, Cloudcroft

Location:

Habitat

?

Elevation: 7000 - 8000 feet

Habitat Specificity: moderately broad

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: shrub

Life Cycle:

Flowering Phenology:

Pollinators:

Flowering Period: June - August

Threats

none known

Assessment

Geographic Range:	5
Range w/in Sacramentos:	3
# Community Types:	5
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	1
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.78

Group: 1

a - score based on scorer's experience with species

Comments

Known only from a few old collections in the Sacramento Mountains. Information is needed on its distribution and abundance. Also, taxonomic problems. with genus in general.

References

Hu, S. 1956. A monograph of the genus *Philadelphus*. *Journal of the Arnold Arboretum* 37: 15-190.

Potentilla sierrae-blancae Wooton and Rydberg

Sierra Blanca cinquefoil

Rosaceae

Synonyms:

Status

FWS: 3C

State: L2

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln and Otero

Other States: no

Distribution Outside New Mexico: none

Ownership: FS, MIR

Distribution - Sacramento Mountains

Local Endemic: yes

Number of Known Populations:

Size of Populations: > 100,000 plants on Sierra Blanca Peak(1981 dam)

Collection: Type: On the very top of White Mountain Peak (Sierra Blanca), Wooton 469 8/16/1897; gravel loam of Lookout Point, White Mountains, 11,400 ft, Hutchins 6/1/69 (UNM 68766 & UNM 45031); Apache Bowl Ski Area near crest, open area, thin soil, 11,200 ft, S32, T10S, R11E, Worthington 6141 (UTEP, CO); crest of mountains W of Sierra Blanca Ski Resort, about .2 mi. S of the overlook lodge at head of tramway (SW 1/4 S33, T10S, R11E), 11,400 ft, rocky windswept W exposure, Worthington 7162 6/14/81 (UTEP, NMSU); Eagle Creek, NW 1/4 S25, T10S, R11E, where the creek bends SE, ca. 6 air mi. NW of Ruidoso and 4 1/2 mi. NE of Sierra Blanca Peak, slopes above where the old road crosses the creek, Soreng and Ward 1604 6/17/81 (CO); Eagle Creek Canyon, NW1/4 S25, T10S, R12E, Soreng 6/17/81 (NMC); Sierra Blanca area in Thurber fescue meadow, S35, T10S, R11E, 10,000 ft, Soreng, 5/17/83 (NMC).

Location: Sierra Blanca Peak to Lookout Mountain Vista

Habitat

Higher elevation sites: open windswept areas on thin soil or on rock outcrops. Lower elevation site: crevices on granite outcrops; Thurber fescue grasslands.

Habitat Specificity: moderately broad

Elevation: 8100 & 10,000 - 12,000 feet

Slope and Aspect: Steep, south facing slope (lower elevation site);

Edaphic Factors: thin soils (higher elevation sites); red to gray granitic outcrop (lower elevation site)

Natural Disturbance:

Successional Status:

Community Types: Subalpine Grasslands

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Flowering Phenology:

Pollinators:

Flowering Period: June - July

Threats

Ski development

Assessment

Geographic Range:	5
Range w/in Sacramentos:	5
# Community Types:	5
Habitat Specificity:	3
Number of Populations:	3
Size of Populations:	1
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 3.00

Group: 4

Comments

A narrow endemic, but very abundant in high elevation meadows of Sierra Blanca. A one-time candidate for federal protection 12/15/80, but dropped from consideration.

References

Wooton, E. O. and P. C. Standley. 1915. *Flora of New Mexico*. 794 pp.

Wooton, E. O., and P. A. Rydberg. 1898. Description of *Potentilla sierrae-blancae* from New Mexico. Mem. Dept. Bot. Columbia Univ. 2:57

Worthington, R. D. 1981. Status Report *Potentilla sierrae-blancae*. USFWS, Albuquerque, NM.

Primula ellisiae Pollard and Cockerell

Ellis' primrose

Primulaceae

Synonyms:

Status

FWS:

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Bernalillo, Lincoln, Otero, and Sandoval

Other States:

Distribution Outside New Mexico:

Ownership:

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: White Mountain Peak, Wootton 8/1/01 (NMC); Cliffs on N ridge of Sierra Blanca Peak, S8, T11S, R11E, Soreng & Spellenberg (NMC).

Location: Sierra Blanca Peak; Lookout Mountain; Elk Point; N & S side of Buck Mtn.

Habitat

Rocky outcrops in subalpine grasslands; in understory of mixed conifer forests.

Habitat Specificity: moderately broad

Elevation: 9000 - 12000 feet

Slope and Aspect: N-facing slopes

Edaphic Factors: igneous soils

Natural Disturbance:

Successional Status:

Community Types: Subalpine Grassland, Rocky Mountain Subalpine Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Flowering Phenology:

Pollinators: flies

Flowering Period: June - September

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.78

Group: 7

a - score based on scorer's experience with species

Comments

Disjunct populations exist between the Sandia and White Mountains. Williams (1936) considers *P. ellisiae* synonymous with *P. rusbyi* var. *ellisiae*. If so, the range of the species would be greatly extended to the northwest and north to include populations in the Black Range, Mimbres Mountains, and the Magdalena Mountains. Taxonomic work needed to clarify this relationship. Moved from L2 to L3 status on the state list 1/6/94.

References

Williams, L. O. 1936. Revision of western *Primulas*. *American Midland Naturalist* 17:741-748.

Pseudocymopterus longiradiatus Mathias, Constance, and Theobald

Desert parsley

Apiaceae (Umbelliferae)

Synonyms:

Status

FWS:

NM: L2

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Eddy, Otero, Sierra, and Socorro

Other States: adjacent Texas

Distribution Outside New Mexico: rare outside New Mexico

Ownership: FS; NPS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: west of Mt. Park in an old apple orchard surrounded by pinyons and rather dense oak thicket about 12 ft tall, along road to Cloudcroft, 6800 ft, Dunn 8097 6/28/52 (LA); Haynes Canyon, in forest of Douglas fir and rock pine, Barlow 8/10/11 (MO)

Location:

Habitat

Damp, narrow canyons; cliffs; sandy or rocky ground; shady arroyos.

Habitat Specificity: restricted

Elevation: 6000 - 7500 feet

Slope and Aspect: N-facing slopes

Edaphic Factors: sandy soil; limestone

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Interior Chaparral

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Timing of Reproduction:

Flowering Phenology:

Pollinators:

Flowering Period: April - August

Threats

Heavy grazing

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	3 ^a
Size of Populations:	5 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 3.00

Group: 6

a - score based on scorer's experience with species

Comments

The southern edge of the Sacramento Mountains represents the northern most range of the species. While relatively infrequent in the Sacramentos, the species has been collected often from the Guadalupe Mountains, NM. It is frequently found under thorny scrub which provides protection from grazing and collection. It grows at lower elevations than the related *P. montanus*.

References

Theobald, C., C. Tsing, and M. Mathias. 1969. Two new species of Umbelliferae from the southwestern United States. *Madrono* 20: 214-219.

Pteryxia davidsonii (Coulter and Rose) Mathias and Constance

Davidson's cliff carrot

Apiaceae

Synonyms: *Aletes davidsonii* Coult & Rose; *Pseudocymopterus filicinus* Woot. & Standl.; *Pseudocymopterus davidsonii* (Coult. & Rose) Mathias.

Status

FWS:

NM: L2

FS: L1

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Catron, Grant, Sierra and Socorro

Other States: adjacent Arizona

Distribution Outside New Mexico: rare outside New Mexico

Ownership: FS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection:

Location:

Habitat

Moist, rocky places.

Habitat Specificity: broad

Elevation: 6500 - 8000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Flowering Phenology:

Pollinators:

Flowering Period: August

Threats

none known

Assessment

no assessment -- species may possibly occur in the Sacramentos, but no known records

Comments

This species possibly occurs in the Sacramento Mountains, but species is not known east of the Rio Grande. *P. davidsonii* may be mistakenly identified in the field as *Pseudocymopterus montanus*, which differs slightly. Its rocky, inaccessible habitat protects it from most threats.

References

- Coulter, J. M., and J. N. Rose. 1900. Monograph of North American Umbelliferae. Contr. U.S. Nat Herb. 7:1-256.
- Mathias, M. L. 1930. Studies in the Umbelliferae III: A monograph of *Cymopterus* including a critical study of related genera. *Annals of the Missouri Botanical Gardens* 17:213-467.
- Mathias, M. L. and L. Constance. 1942. New combinations and new names in the Umbelliferae II. *Bulletin of the Torrey Botanical Club* 69:244-249.

Ribes mescalerium Coville

Mescalero current; Southwestern black current

Saxifragaceae

Synonyms:

Status

FWS:

State: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Lincoln and Otero

Other States: Texas

Distribution Outside New Mexico: rare outside New Mexico

Ownership:

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: Fresno, Otero County, Wooton 7/21/1899; School House Canyon, Turner 5/11/1899 (NMC); Tularosa Creek, White Mtns., 7000 ft, Wooton 8/6/01 (NMC); 1 mi. NE of Cloudcroft in open meadow of forest margin, Dunn 7/29/51 (NMC).

Location:

Habitat

Dry slopes in open pine forests

Habitat Specificity: broad

Elevation: 7000 - 9000 feet

Slope and Aspect:

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: shrub

Life Cycle:

Mode of Reproduction:

Pollinators:

Flowering Period: May - August

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	3
# Community Types:	3
Habitat Specificity:	1
Number of Populations:	3 ^b
Size of Populations:	3 ^b
Life History:	1
Threats:	1
Habitat Vulnerably:	1

Mean Score: 1.89

Group: 7

a - score based on scorer's experience with genus

Comments

Information is needed on this species' abundance and distribution. In general, taxonomic problems exist with the genus.

References

1900. Proc. Biol. Soc. Washington 13: 196

Senecio sacramentanus Wooton and Standley

Sacramento groundsel

Asteraceae

Synonyms:

Status

FWS:

NM: L3

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Bernalillo, Catron, Lincoln, Otero, and Valencia

Other States: no

Distribution Outside New Mexico: none

Ownership: FS; MIR; private.

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: In the vicinity of Cloudcroft, near the summit of the Sacramento Mountains, 2620 m, Wooton 8/15/01 (US Nat. Her. no 690237); James Canyon, Wooton 8/11/1899; Cloudcroft, Wooton 8/24/01 (NMC); Upper end of Kay Canyon, on road to Sacramento Peak, NW1/4 S27, T16S, R11E, Spellenberg 8/16/90 (NMC); floor of Woods Canyon, N center S15, T18S, R12E, Spellenberg 8/26/90 (NMC); Junction of Bailey & La Luz Canyon, center of S23, T15S, R12E, Spellenberg 8/16/90 (NMC); E. of La Luz on USFS Rd. 162, 1 mi. below junction w/ Blair Canyon Rd, Spellenberg & Ward, 8/5/87 (NMC); Hwy 130, 0.5 km S of Sleepy Grass Campground on stabilized N-facing roadbank, Spellenberg 8/16/90 (NMC).

Location:

Habitat

Understory of fir-maple-oak and mesic Doug-fir forests; roadbanks.

Habitat Specificity: moderately broad

Elevation: 8000 - 11000 feet

Slope and Aspect: E- & W-facing slopes

Edaphic Factors:

Natural Disturbance:

Successional Status:

Community Types: Rocky Mountain Conifer Forests, Subalpine grasslands.

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: July - September

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	3
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.33

Group: 7

a - score based on scorer's experience with species

Comments

A polymorphic species which takes different forms in different mountain ranges and in need of a taxonomic review. It is similar to *S. bigelovii* and *S. pudicus* (Barkley 1978). Found with *Lesquerella aurea*.

References

Barkley, T. M. 1978. *Senecio*. North American Flora, Series II, Part 10, pg. 50-139. New York Botanical Garden.

Wootton, E. O., and P. C. Standley. 1913. New plants from New Mexico. Contr. U.S. Nat Herb 16:109-196.

Sibara grisea Rollins

Gray sibara

Brassicaceae

Synonyms:

Status

FWS: 3C

NM: L2

FS:

TNC: G3?, S3

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Chaves, Eddy, and Otero

Other States: adjacent Texas, Mexico (?)

Distribution Outside New Mexico: rare outside New Mexico

Ownership: BLM; FS; NM; NPS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations: 12 (1987 data)

Size of Populations: Distribution: 9 populations-50 or less plants (data only for 9 of the 12 populations).

Collection: Type: In limestone cliff areas, Marble Canyon, 4400 ft, Van Devender, Betacourt, and Wimberly 6/4/79 (AZ); 3.5 mi. due E of US 70 through Alamogordo in Marble Canyon of W slope of Sacramento Mountains, 5000 ft, Spellenberg and Spellenberg 5500 5/11/80; 4 mi. E of US Hwy. 70, Marble Canyon, 6000 ft, , Spellenberg and Spellenberg 5507 5/11/80; Alamo Canyon, Knight 1986; West escarpment of Sacramento Mtns., mouth of San Andres Canyon, NW1/4 SE1/4 S33, T17S, R10E, numerous individuals, McIntosh 5/27/87 (NMC); Mouth of Mule Canyon, Sacramento Mtns, NE1/4 SE1/4 S8, T17S, R10E, numerous flowering individuals at base of cliff, McIntosh 4/2/87 (NMC).

Location: Alamo, Arrow, Deadman, Marble, Mule, Muleshoe, and San Andres Canyons, Unnamed Canyons, and Joplin Ridge (S3, 10, 22, 25, T16S, R10E; S34, T16S, R11E; S8, 10, 17, 20, 28, 33 T17S, R10E; S4 T18S, R10E) (see Status Report for precise locations)

Habitat

Limestone cliff faces, overhangs, and at base of cliffs or otherwise nearly barren clayey soil.

Habitat Specificity: restricted

Elevation: 4600 - 5250 (Sac. Mtn. pops) feet

Slope and Aspect: N- & NW- facing slopes (Sac. Mtn. pops)

Edaphic Factors: soft travertine limestone (Sac. Mtn. pops)

Natural Disturbance:

Successional Status:

Community Types: Interior Chaparral, Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: annual

Mode of Reproduction:

Pollinators:

Flowering Period: March - June

Threats

none known

Assessment

Geographic Range:	3
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	1 ^a
Size of Populations:	3 ^a
Life History:	5
Threats:	1
Habitat Vulnerably:	1

Mean Score: 3.00

Group: 7

a - score based on scorer's experience with species

Comments

A rare annual with wide annual fluctuations in numbers as a result of favorable wet periods. For example, the Marble Canyon population is described as "abundant" on herbarium sheet (Type Specimen), while a 1987 survey (Cully and Knight 1987) found only 36 plants. Additionally, population size varies spatially. In 1987, populations in the Guadalupe Mountains ranged from populations containing over a thousand plants to as little as 5 plants in a population.

Populations located in the Sacramento Mountains and on the east side of the Guadalupe Mountains similar in habitat requirements; while populations located on the west side of the Guadalupe and Brokeoff Mountains favor a drier habitat. Rollins (1981) reports this species occurs in Mexico.

Species possibly hybridizes with *Arabis* or *Dryopetalon* species (Rollins 1981).

References

Cully, A. and P. J. Knight. 1987. Status Report on *Sibara grisea*. USFWS, Albuquerque, NM.
(see references therein)

Rollins, R. C. 1981. Species of *Draba*, *Lesquerella* and *Sibara*. *Contr. Gray Herb.* 211:111-114.

Stipa curvifolia Swallen

Curlleaf needlegrass

Poaceae

Synonyms:

Status

FWS:

NM: L4

FS: L1

TNC:

Handbook: T

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Dona Ana, Eddy and Otero

Other States: western Texas; northern Chihuahua, Mexico

Distribution Outside New Mexico: ?

Ownership: BLM; DOD; FS; private

Distribution - Sacramento Mountains

Local Endemic: no

Ranger Districts: Number of Known Populations:

Size of Populations:

Collection: S-SW of Bent on SW slope of Mtn. Lion Peak, SW1/4 S34, T13S, R11E, many plants, 6600 ft, Spellenberg 6/17/91 (NMC).

Location:

Habitat

Limestone rims, cliffs, steep slopes, crevices of rocky outcrops; highly gypseous soils.

Habitat Specificity: restricted

Elevation: 4000-6600 feet

Slope and Aspect: N- & NE-facing slopes

Edaphic Factors: limestone and gypseous soils

Natural Disturbance:

Successional Status:

Community Types: Interior Chaparral, Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: bunchgrass

Mode of Reproduction:

Flowering Phenology:

Flowering Period: May - June

Life Cycle: perennial

Timing of Reproduction:

Pollinators:

Threats

cattle grazing

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	5
Number of Populations:	1 ^a
Size of Populations:	3 ^a
Life History:	5
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.78

Group: 7

a - score based on scorer's experience with species

Comments

Removed from consideration for federal protection 12/15/80 Dropped from state list—too common or widespread

References

Swallen. 1933. *Wash. Acad. Sci. Jour.* 23:454

Hitchcock, A. S. and A. Chase. 1950. *Manual of the grasses of the United States*. USDA Misc. Pub. 200.
(Reprinted 1971, Dover Publications, New York in 2 volumes)

Spellenberg, R. 1981. Status report on *Stipa curvifolia*. USFWS.

Tetradymia filifolia Greene

Threadleaf horsebrush

Asteraceae

Synonyms:

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: yes

New Mexico Counties: Lincoln, Otero, Sandoval, Socorro, and Valencia

Other States:

Distribution Outside New Mexico:

Ownership: BLM; DOD; FS; NM; private

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Type: Round Mountain on Tularosa Creek above Tularosa, White Mountains, Wootton 183; Southside of Deadman Canyon, Sivinski 2961; 1/2 mi. W of Tunnel on US 82, about 1 1/2 mi. W of High Rolls on steep NW-facing slope, 6000 ft., Spellenberg 9/20/70 (NMC).

Location: Tularosa Creek, Nogal Canyon, Fresno Canyon, Deadman Canyon.

Habitat

Limestone or highly gypseous soils, usually in Pinyon-Juniper woodlands.

Habitat Specificity: restricted

Elevation: 4900 - 6000 feet

Slope and Aspect: NW-facing slopes

Edaphic Factors: Limestone or highly gypseous soils

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: shrub

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: July - September

Threats

none known

Assessment

Geographic Range: 1
Range w/in Sacramentos: 3
Community Types: 5
Habitat Specificity: 5
Number of Populations: 3^a
Size of Populations: 3^a
Life History: 1
Threats: 1
Habitat Vulnerably: 1

Mean Score: 2.56

Group: 5

a - score based on scorer's experience with species

Comments

Dropped from state list--too common or widespread.

References

Greene, E. L. 1898. New Compositae from New Mexico. *Bulletin of the Torrey Botanical Club* 25:117-124.

Strother, J. L. 1974. Taxonomy of *Tetradymia* (Compositae; Senecioneae). *Brittonia* 26:177-202.

Tradescantia wrightii Rose and Bush

Wright's spider lily

Commelinaceae

Synonyms:

Status

FWS:

NM: L4

FS:

TNC:

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Eddy, Lincoln, Otero, Socorro, and Torrance

Other States: adjacent Texas

Distribution Outside New Mexico: ?

Ownership: BLM; FS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Near junction of Wild Boy and Snaky Canyons, S14 T19S, R 11E, Todsan (NMC).

Location:

Habitat

Ledges, moist canyons, streambanks; usually on limestone substrates where water collects

Habitat Specificity: moderately broad

Elevation: 3500 - 5000 feet

Slope and Aspect: NW-facing, steep to shallow slopes

Edaphic Factors: limestone, shallow soils

Natural Disturbance:

Successional Status:

Community Types: Interior Chaparral, Great Basin Conifer Woodland

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: June - September

Threats

Grazing (rabbits)

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 7

a - score based on scorer's experience with species

Comments

The above-ground presence of this species depends on seasonal moisture. Dropped from state list—too common or widespread. Removed from federal consideration 12/15/80.

References

Anderson, E., and R. Woodson. 1935. The species of *Tradescantia* indigenous to the United States. *Contributions of the Arnold Arboretum* 9:1-132.

Valeriana texana Steyermark

Texas tobacco root; Guadalupe valeria

Valerianaceae

Synonyms:

Status

FWS: C2

NM: L2

FS:

TNC: G3, S2S3

Distribution - General

Endemic to New Mexico: no

New Mexico Counties: Eddy, Lincoln and Otero

Other States: adjacent Texas

Distribution Outside New Mexico: rare outside New Mexico

Ownership: FS; NPS

Distribution - Sacramento Mountains

Local Endemic: no

Number of Known Populations:

Size of Populations:

Collection: Eagle Creek Canyon, S25 T10S, R11E, locally common on shady aspects, Soreng 7/11/82 (NMC); Eagle Creek Canyon, extreme NE corner S25, T10S, R11E, little to no shade, on exposed W-facing cliff, Ward & Soreng 6/17/81 (NMC); In crevices of large boulders and granite cliffs, 2 mi. up from Three Rivers Campground, White Mountain Wilderness, Todsén 6/24/73 (NMC).

Location: Sacramento and Capitan Mountains

Habitat

Moist limestone rock faces; crevices in large boulders; occasionally in canyon bottoms.

Habitat Specificity: moderately broad

Elevation: 6000 - 8800 feet

Slope and Aspect: S- & W-facing slopes

Edaphic Factors: limestone

Natural Disturbance:

Successional Status:

Community Types: Great Basin Conifer Woodland, Rocky Mountain Montane Conifer Forest

Population Biology/Ecology

Life Form: herb

Life Cycle: perennial

Mode of Reproduction:

Pollinators:

Flowering Period: April - July

Threats

none known

Assessment

Geographic Range:	1
Range w/in Sacramentos:	5
# Community Types:	3
Habitat Specificity:	3
Number of Populations:	3 ^a
Size of Populations:	3 ^a
Life History:	3
Threats:	1
Habitat Vulnerably:	1

Mean Score: 2.56

Group: 7

a - score based on scorer's experience with species

Comments

Species is occasionally abundant within its limited range. Known from the Guadalupe, Sacramento, and Capitan mountains. Candidate for federal protection 12/15/80, but dropped from consideration.

References

Steyermark, J. A. 1932. Some new Spermatophytes from Texas. *Annals of the Missouri Botanical Garden* 19:389-395.